

AMERICAN FORESTS



JANUARY 1937

35 CENTS A COPY

A Happy New Year

for *Kathryn*



Dear Warner: You can toss away
the memorandum of that other
phone number now as we have
one of our own! And if you
don't think I feel swell about
it, you're not the smart brother
I think you are. I get a
kick every time I pass that
telephone in the living room.

Kathryn

The number is Exchange 2376.

THAT'S a real letter—written by a real Kathryn—to her brother. You can read her happiness in every line. She's mighty glad to have the telephone back.

And so are a great many other men and women these days. About 850,000 new telephones have been installed in the past year.

That means more than just having a telephone within reach. It means keeping the family circle unbroken—contacts with people—gaiety, solace, friendship. It means greater comfort, security; quick aid in emergency.

Whether it be the grand house on the hill or the cottage in the valley, there's more happiness for everybody when there's a telephone in the home.

The Bell System employs more men and women than any other business organization in the United States. The total is now close to 300,000. Good business for the telephone company is a sign of good business throughout the country.

BELL TELEPHONE SYSTEM

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NEXT MONTH

Is the Migratory Bird Treaty Act violated by commercial shooting? Nash Buckingham, well known conservationist and sportsman, who has been observing conditions right in the lair of the "commercials," will present his conclusions in the February issue—a significant and dramatic article you cannot afford to miss.

Sherman Adams, a representative of industry from New England, has written a vital article on industry as it relates to National Forest administration, dwelling particularly on the survival of industrial communities.

The pictorial feature for the month will portray the interesting and romantic story of the naval stores industry in the South. The various phases of gathering and distilling the liquid gold of the Southern pine will be presented. I. F. Eldredge is the author.

The issue will bring you a new slant on George Washington as a gardener. James Hay, Jr., is the author. There will also be W. R. Mattoon and others with articles and stories of real interest.

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The Editors are not responsible for loss or injury of manuscripts and photographs while in their possession or in transit. All manuscripts should be accompanied by return postage. The Editors are not responsible for views expressed in signed articles . . . Notice of change of address for **AMERICAN FORESTS** should be received by the tenth of the month preceding issue.

Member A. B. C.
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EYES ON THE CAPITAL

■ On January 5, a new Congress will convene in Washington for another year of federal law making. Already the eyes of the nation are turned upon the Capital.

Thousands of bills — some good, some bad — will be dropped into the lap of the new Congress. Many of them will deal with the conservation of the country's natural resources.

It is of tremendous public concern that the good bills be winnowed from the bad. Unwise laws harm all the people and confuse progress. They result from public ignorance and apathy. Wise laws benefit all the people. They are made by intelligent public opinion.

From its inception more than sixty years ago, The American Forestry Association has labored to develop an informed public opinion in regard to our natural re-

sources and the need of conserving them for the permanent good of the American people. By assembling and disseminating the facts it has pioneered the way to present conservation progress.

Among its numerous educational activities, the Association has promoted informed discussion of forest and other bills dealing with our natural resources. It has sponsored or given its support to those bills that in its judgment will best serve the public interests, irrespective of creed, class or politics.

In line with this policy, the Association during the coming session of Congress will continue to serve the public — citizen and public servant alike — by bringing to bear upon proposed conservation legislation the best information available and by supporting those measures that are for the common good.

Note — In this space is presented each month the Association's policy in respect to timely phases of conservation

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THE EDITOR'S LOG

WHEN church bells and factory whistles and gay crowds everywhere sound out the old and sound in the New Year, AMERICAN FORESTS will cross the threshold of its fortieth year of continuous publication.

In keeping with that event, this January number marks another step forward in editorial improvement. Readers will not fail to note its new and more readable type faces, its improved format; its more striking photographs, and its added departments. AMERICAN FORESTS belongs to its readers. The editors hope they will become more and more a part of its voice. To this end, their comments and suggestions will be welcomed at all times.

* * * * *

This January issue is the 469th number of the magazine. Back in 1897, The American Forestry Association acquired from Mr. John Gifford, a pioneer forester of Princeton, New Jersey, a small publication which he had started the year before under the name "The Forester." January, 1898, saw the first issue of the Association's magazine. Since then there has been no break in its chain of editorial service for the principles and ideals of forestry and related conservation.

Month by month, year by year, it has held true to its original purpose of diffusing knowledge regarding our natural resources, of defining the conservation problems which a speed-driven nation has been increasingly heir to, of moulding public thought and mind for constructive action and of recording with a completeness not to be found elsewhere in the country the current progress of the conservation movement. And last but not least, it has been a leader of conservation thought and a vigilant defender of the ground gained in many hard fought battles for the preservation of the nation's natural resources.

Looking back over the course it has come, AMERICAN FORESTS has been an untarnishable badge of service for its trail-blazing subscribers. Looking ahead it will be an even brighter badge of service for those who would carry conservation to its ultimate achievement for the common good of all our people.

* * * * *

During the past year, The American Forestry Association has lost by death a member whose passing will be missed in almost every federal prison in the United States and in several hundred hospitals. Mrs. Anna B. Scherer, of Stamford, Connecticut, of whom conservation knew or heard little, died on June 24, 1936. Unknown to the Association, she became a subscribing member on April 21, 1928. Later she became a Life Member and began giving subscribing memberships to her friends.

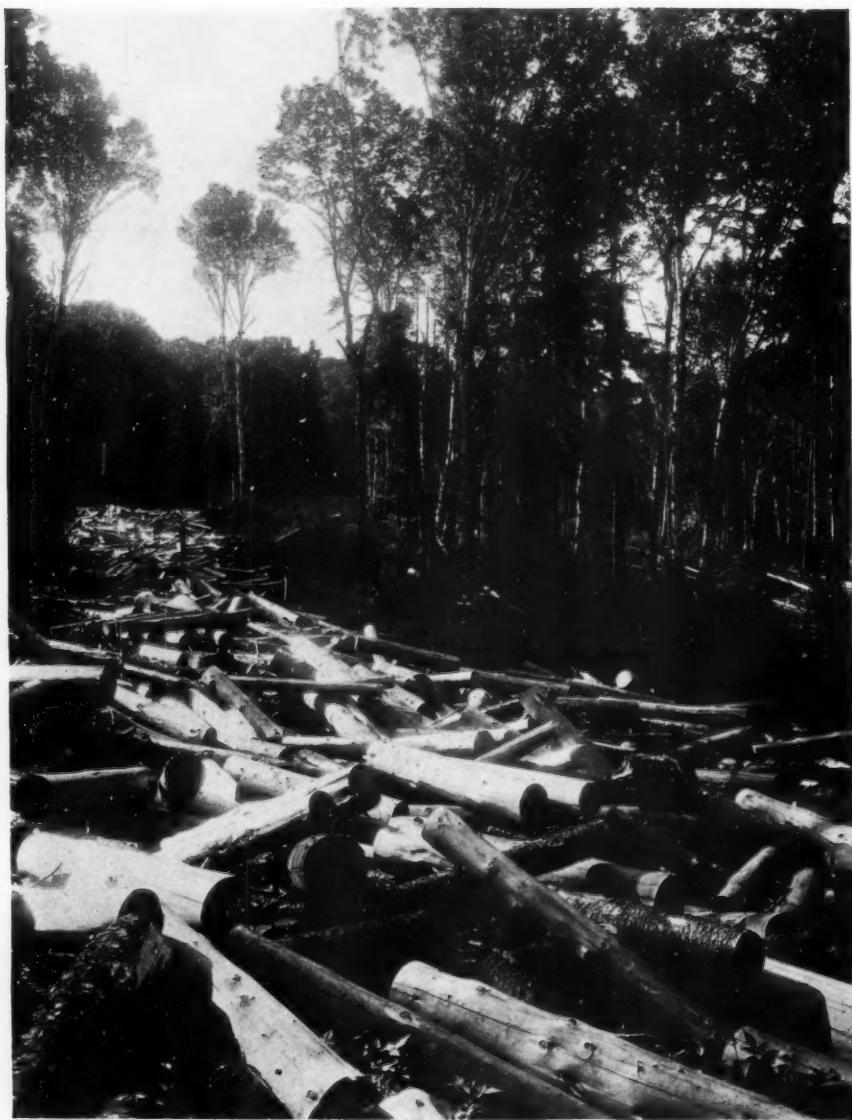
Mrs. Scherer was an ardent admirer of AMERICAN FORESTS. Three years ago she made it the medium of carrying the spirit, beauty, and freedom of the forests to those unfortunates confined within the four walls of prisons and hospitals. Her donations included subscriptions to all federal prisons and to over one hundred hospitals. In addition, she made a score or more schools the objects of her benefactions.

At the time of her death she was the donor of a total of 640 current subscriptions each carrying a monthly message of conservation and the great outdoors into lives throughout the country, to whom the outdoors is denied. Her joy in this service was a thing beautiful. Her subscriptions are soon to terminate. Who will carry on the worthy work she has so unselfishly started?



One last

In the domain of King Spruce



Paper from the hills of New Hampshire

A Southern pulpwood mill—
arm of the new contender!



IS THE PAPER INDUSTRY MOVING SOUTH?

FOR close upon a hundred years, spruce has been king of American pulpwoods. From his domain in the north where his subjects peopled the hills and valleys from the ocean to the plains he has gathered into the hollow of his hands America's paper industry. He has fostered it to industrial greatness and built around himself an empire of capital investments that run into billions of dollars.

Comes now a new contender—the fast growing pine of the South—to hurl an economic challenge to King Spruce and his dynasty of pulp mills and to raise the question: Are his days numbered with the seeming certainty that hangs over kings of the flesh and blood?

The question is pertinent because there is a growing belief that America's pulp industry is on the brink of a general exodus from the North to build a new industrial empire in the South. Progressive developments in pulp and paper-making technique have, it is claimed, opened the paper-making world to the South with its millions of acres of rapidly growing pines, cheap labor and other economic advantages. The increasing number of pulp mills that have been built in recent years or are now building in the South give color to the picture and substance to current claims that the secret of making white papers, including newsprint, commercially has been solved, that the industry already is on the move southward and that it is only a question of years until the pulpwood crown will pass to

Southern Pine Challenges King Spruce for the Crown of the Paper Kingdom

By JOHN F. PRESTON

the pines of Dixieland. Are these claims well founded? Is there reason to believe the many other stories now current about the imminence of pulp and paper development in the South? What are the real facts? In a recent trip through a portion of the South I tried to arrive at a sensible, reasonable and impartial conclusion.

In appraising the possible swing of the industry, it must be borne in mind that the pulp and paper industry practically grew up on spruce, balsam and hemlock,—woods which seemed to have inherent qualities preeminently setting them apart as pulp species. The first chemical process (about 1850) for converting wood to pulp was the soda process, adapted to cooking short fiber woods such as aspen and hardwoods; the product was bulky and lacked strength, but was suitable for book and magazine papers. The development of the sulphite process, (about 1883) however, really established the paper industry as a large-scale business and it was this process, dependent as it was on spruce, balsam, and hemlock, which caused such a concentration of the

industry in the Northeast where these woods grew. The book and magazine paper mills also concentrated in the Northeast partly because aspen, the chief of the soda pulp species, was most abundant here, and partly, of course, in both cases, because of nearby markets. Usually, too, more or less sulphite pulp made from spruce is added to the soda pulp to provide the necessary strength.

Spruce was also adapted to grinding, —a method in which the entire log was made into pulp—whereas by the chemical process only the pure cellulose, which

is usually less than one-half the dry weight of the wood, is used. The pure chemical pulp is used in making the higher grades of white paper such as writing, ledger and general office forms and, in combination with the ground wood pulp, is made into newsprint paper. Spruce offered no difficulties in bleaching, was fairly free from pitch trouble and the fiber was flexible and easily meshed. The paper industry therefore built its empire on a spruce foundation with balsam and hemlock as acceptable but less desirable substitutes.

In the United States a spruce-fir-hemlock belt extends from Maine westward through the Lake States and in Canada to the northern latitude of tree growth. This spruce belt in the United States coincided well with the center of population and the market for paper. It was natural therefore that the paper mills were first built in this spruce belt and are still much concentrated there.

Partial exhaustion of the spruce forests in the northeastern United States caused the building of mills in adjoining Canada and on the Pacific Coast, most of which were spruce mills.

Meanwhile, another important chemical process was perfected, known as the sulphate process. This process was soon found to be very useful in converting into pulp the abundant and cheap pines, especially the southern pines. The large volume of pitch characteristic of pine trees was successfully dissolved by this method. The resulting pulp, however, was difficult as well as expensive to bleach, so the product was chiefly unbleached wrapping paper or boards of a natural brown color, which came to be known as kraft paper.

For a time the paper industry seemed to settle down, more or less contentedly, with each class of product and process more or less dis-

tinct. Spruce dominated the pulp field and seemed secure as the "King of the Pulpwoods." In spite of the increasing use of other woods, spruce, fir and hemlock still constitute about seventy per cent of the pulpwood used in the United States. The newsprint industry gradually moved across into Canada where water-

power and spruce were cheap. A few newsprint mills were built in the West and of course a considerable number remained in the northeastern United States. The "white paper" industry — meaning usually the products resulting from spruce wood cooked by the sulphite process—remained fairly stable since the higher priced product permitted hauling wood a considerable distance to the mill. Sulphite mills appeared in Canada and in the West but the major portion of the industry stayed "put." The South had its kraft mills but very few making other products.

The South having no spruce except extremely limited quantities in the Appalachian Mountains, its paper industry was a one-product business. The cry was for diversification and that meant solving the problems of making "white" papers from pine—a very pitchy pine at that—and from hardwoods, chiefly gum. A laboratory method of making "white" paper from pine was developed by using a modification of the sulphate process and by the sulphite process, but its use commercially did not materialize. Then the Chemical Foundation, in cooperation with the State of Georgia, established an experimental pulp and paper laboratory at Savannah, Georgia, under the direction of Dr. Charles H. Herty.

As a result of experiments at this laboratory it is now claimed that the problems have been solved. As evidence, an edition of nine Georgia papers was recently published on newsprint paper made from Southern pine at the Savannah laboratory and a northern newsprint mill. The sulphite process, it is claimed, can be used in converting Southern pine into pulp by selecting only trees without heartwood, because there is practically no pitch present in such trees. The northern paper mill which made the newsprint out of Southern pine pulp ran for eight hours and reported no pitch trouble.

Other claims are made by enthusiasts in the South as to the large area of commercial timberland, the rapidity of growth of pine trees and the tremendous yields to be obtained in "managed" forests of Southern pine. It is not difficult to show that the combination of rapidly-growing trees and large areas of forest land will produce sufficient quantities of pulpwood to supply the world's requirements for paper of every grade, and at a price so much cheaper than it can be



Southern pines.

produced elsewhere, that it is easy to conclude the pulp and paper industry will soon move bag and baggage to the land where Southern pine grows.

In a recent publication of the Chemical Foundation called "The Deserted Village" growth figures for the southern pines are quoted from a circular of the United States Forest Service as follows: In fully stocked stands at twenty years of age the yields of pulpwood to be expected on an acre are, for longleaf pine, fifteen cords; shortleaf pine, eighteen cords; loblolly pine, twenty-eight cords; and slash pine, thirty-six cords. These are, of course, theoretical figures not obtainable over extensive areas even under the most intensive management. They do, however, indicate the relative growth and yield of the four principal southern pines. In the same publication an eminent pulp and paper engineer from Canada is quoted as saying that 300 square miles of southern pine land will produce pulpwood to supply a 500 ton newsprint mill while the same mill now requires 2,000 square miles of Canadian spruce land. The relation is almost one to seven in favor of the South.

There is no question about the large area of timber-growing land down South. The present stand of timber is, however, disappointingly light with very considerable areas of denuded and waste lands. Everywhere, fires burn through the woods year after year and it is surprising to find that any forest can survive such treatment.

Fortunately we have actual figures to show the existing stand of timber in the South. The Southern Forest Experiment Station, of the Forest Service, has published the results of an actual survey of 68,000,000 acres in the "deep South" from Texas to South Carolina. About sixty-eight per cent was found to be forested and the average stand suitable for pulpwood was four and two tenths cords of pine and two cords of hardwood. However, if that part of the pine stand "in trees that are now being worked for naval stores or are considered likely to be

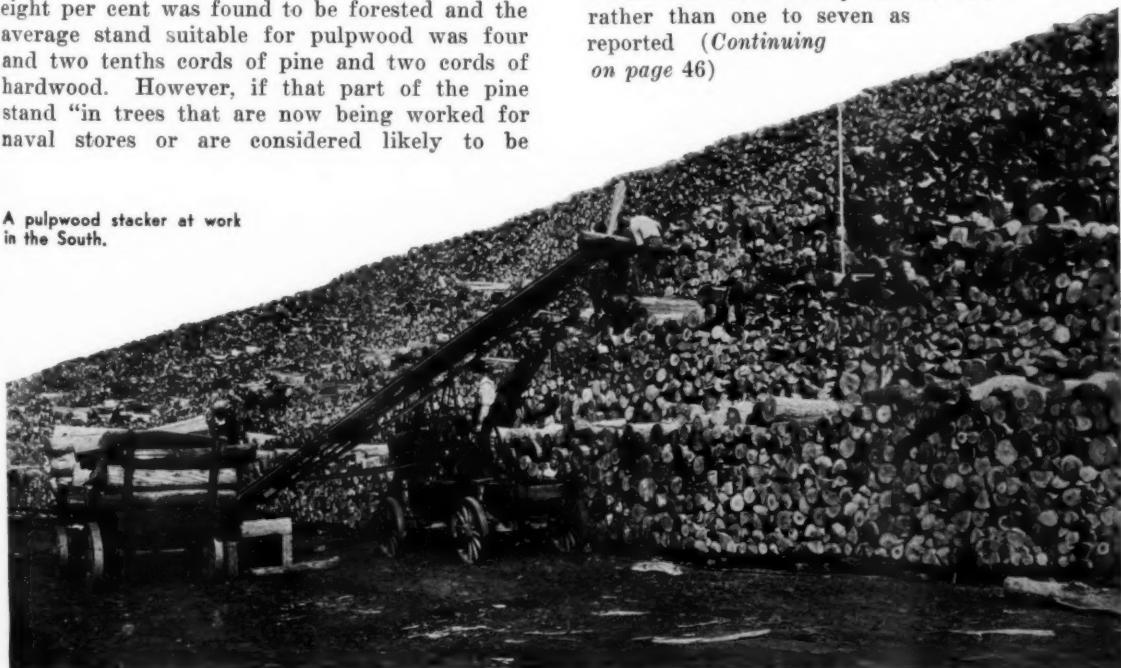
worked in the future," are deducted, the net stand on the average acre is reduced to two and six tenths cords. In other words, the existing stand of pine timber suitable for newsprint or white paper is two and six tenths cords for an average acre, which is a pretty thin crop. There is no shortage of hardwoods for pulpwood North or South, at least so far as concerns present or prospective demands for pulpwood; it is only the softwoods that are really important.

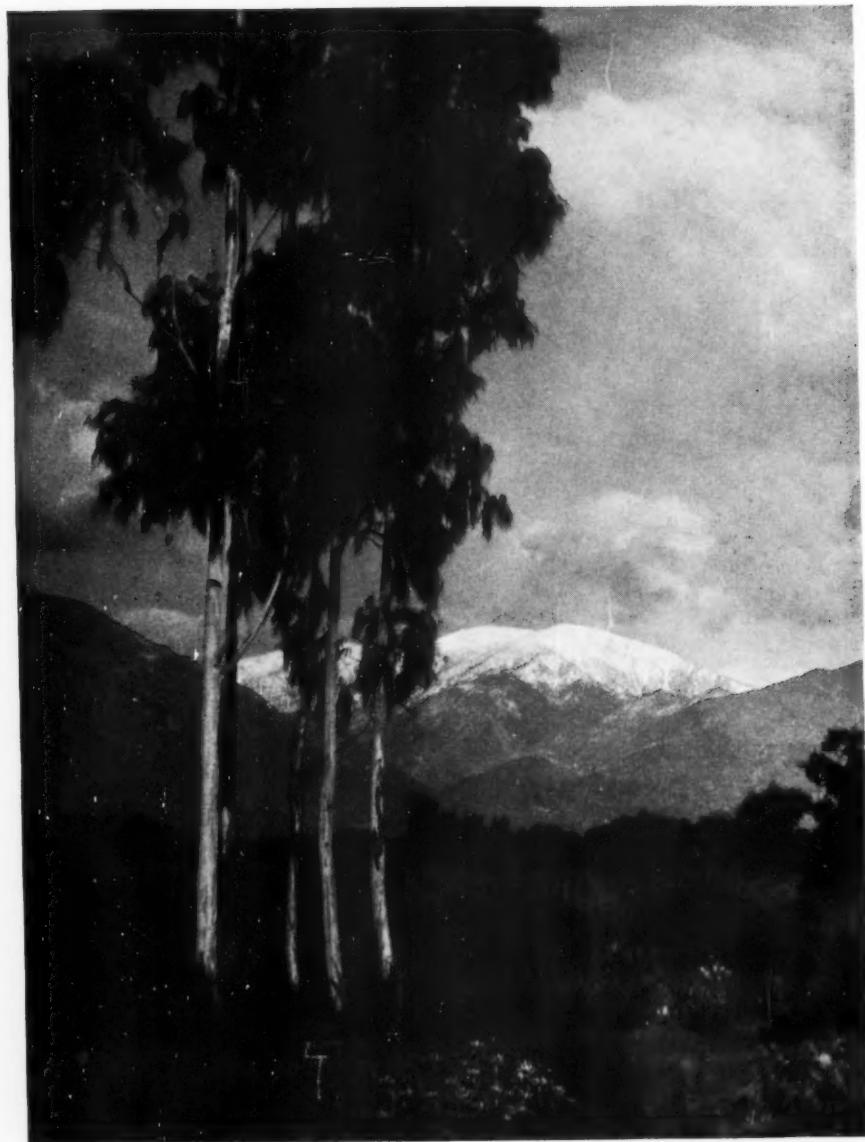
Although it is possible to grow very much larger volumes of southern pine timber than are now growing, it seems improbable that the transformation can be brought about within several generations. Growth in certain instances, it is true, is quite phenomenal. Examples of natural second growth slash pine can be found which are merchantable for naval stores in twelve to fifteen years, that is, where the stands have been thinned so as to give individual trees plenty of light. However, such growth, as every forester will admit, is unusual and must be considered far above the average. On the Oceola National Forest in Florida which contains 150,000 acres of the better class of forest-growing land, a period of twenty-five years is allowed in which to grow a pine tree on the average site to nine inches.

I find that the most optimistic forester considers a growth of one cord an acre a year as much as he should estimate on a property of 100,000 acres, assuming successful fire protection and the practice of intensive management. Others, more conservative, estimate not more than one-half this growth.

I would conclude that the relation between growth of spruce in the North and pine in the South was more nearly one to two rather than one to seven as reported (Continuing on page 46)

A pulpwood stacker at work in the South.





Loyd Cooper

In the land of
the elfin forests.

ELFIN FORESTS

By FARNSWORTH CROWDER

IT WAS July and we were driving south from Monterey through breathless heat. A look of panting exhaustion lay upon the brown and dusty landscape under a smoky grey sky that was devoid of any color or spectacle. You felt that the sight of a real verifiable cloud with a generous swig of rain in it would make the sun-struck earth quake with the shock.

The vegetation, stunted, dejected looking and matted, covered the hills like a suffocating fleece of dirty wool. It made your throat dry just to look at it. Moreover, it went on and on, interminably for hundreds of miles. It pushed right in to the boundaries of the city that was our destination. We had expected that California would tease and pamper our weakness for botanizing and what had we here, surrounding our new home, but stretches of thorny, repulsive scrub? We complained. Some one suggested we take up marine fauna as a substitute diversion and we accordingly bought a couple of texts, turned a cold shoulder on the abominable hills, rolled our pants legs to the knees and slopped about in the Pacific after crabs and jellyfish.

We might have continued thusly, becoming mildly looney over brachiopods and coelenterates, had we not run onto Will Gere. We had botanized with him on the Indiana sand dunes and at timberline on Pike's Peak. He was an actor come to Hollywood and we found him round-shouldered in a public library, not over a treatise on "How to Become a Movie Star," but over a volume on the forests of Southern California.

"Forests?" we exclaimed. "What forests? Where?"

"Everywhere," he said. "Practically under your feet, all but in your hair at this moment."

"Look here, are you talking about all that dirty drought-striken brush on the hills? That's no forest, it's a pest."

Will stood up. "Would you mind stepping outside," he suggested, almost ominously as if he meant to pummel us for ignorance and insolence.

We went out and sat on the library steps and Will uttered his defense of the brush.

"So you think it looks dumpy and parched and drab? I'll bet you haven't really looked at it. The intimate and wonderful features of a forest are lost to a man seeing it from an airplane. He needs to get down into it. You need to get down into this forest, on your knees, on your chin, if

necessary. You are a Gulliver and this forest is Lilliputian—dwarf—elfin. But it's a forest for all that. In area it compares with the greatest in the world. It covers the ranges, from central California deep into Mexico.

"In function it's completely a forest—conserves moisture, retains the soil on the hills, furnishes cover for beasts and birds and pasturage for bees. It boasts a good 150 species of shrubs and small trees. Its open spaces throw up the richest wild flower displays you can find on earth. And it isn't unlovely and colorless. Oddities, beauty and lore in it. It's dormant now. But wait 'til the rains start and it comes to life. You'll see. That is, you'll see if you bother to look."

Thus rebuked and prodded, we determined to investigate, to come down from our giant heights and look at these trees that came to our waists and our chins. Our instruction began with "chaps"—the word applied to those pants all legs and no seat, worn by movie, by rodeo and occasionally by real cowboys. An invention of the Spanish *vaquero*, they were devised for protection while riding against the hostile scrub-oak or *chaparro* of the Mexican cattle ranges. This hostile oak is a prominent citizen of the dwarf forests and gives them their distinctive name—the chaparral.

Well, we liked the name—it had a tang, it exercised our tongue and smacked our lips. And when the rains finally did wash down, we liked them too. And we watched the hills, from sea-shore to the 8,000-foot summits. The dead, choking aspect faded and the green and luster of life spread on the slopes; the change continued, dramatically, while the gentle drizzling transfusion kept up from sky to famished earth,—an act of celestial mercy.

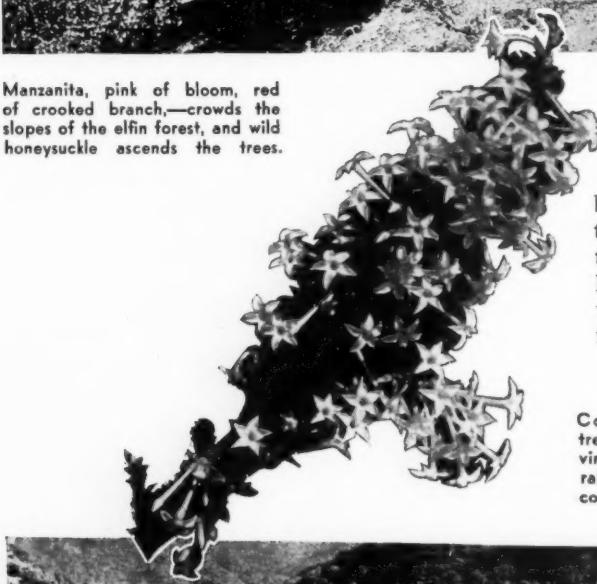
We ventured out, afoot and horseback, along the trails. Mounted, we could look out over square miles of the mossed elfin jungle. We noted the astonishment of bloom, the miracle of new greens and grays. Untold thousands of square miles of forest had waked from the dormance of an eight months' summer to a vigorous springtime in mid-winter. It is thus with elfin forests wherever they occur—the normal rhythm of growth and rest is reversed. The chaparral makes hay while the sun does not shine. It cannot grow very fast nor for very long. Its sportive days are brief and cold, a hurried preparation for

the long summer siesta of parching desert heat.

Entranced, we began to seek out individuals. In what had appeared a dismal monotony we found more variety than we ever hope to master.



Manzanita, pink of bloom, red of crooked branch,—crowds the slopes of the elfin forest, and wild honeysuckle ascends the trees.



The first native we learned to call by name was manzanita *Arctostaphylos* (equaling bear-grape, because bruin relishes the fruit). Clear, pink-white flowers, like urns cut from alabaster, shown against the greyish leaves that stood erect and alert as rabbit ears. But what struck us was the polished chocolate red branches, which achieved the ultimate in crookedness—a fact which has aroused a perverse appetite among cane collectors to own a straighter manzanita stick than any rival cane collector.

Attaining the dimensions of small trees, the manzanita crowds with its kin into impenetrable masses. It bears a crop of rosy apples—elfin, like everything else (Spanish for apple is *manzana*). To the Indian these diminutive fruits were food, drink and smoke. It has been estimated that an acre of manzanita will produce as much nourishment as an equal area of wheat. The Indians ate the fruit as it came; they scalded and crushed it to produce a cider; they smoked the dried leaves and fashioned pipe bowls from the wood. The hardness of the wood made it available to the iron-poor padres who cut manzanita pegs for the building of the early missions.

It was easy, on account of their flowering, to spot the mountain lilac (*Ceanothus*) sometimes called myrtle, or, more appropriately, if less beautifully, soap-brush. That anything so lovely as these shrubs and diminutive trees, with their multitudinous delicate plumes of blue and white and lavender, should be called soap-brush seemed all wrong until we learned to crush a handful of the flowers in our hands and work up an abundant cleansing lather. There are many species. One blooms so profusely white that at a distance masses of it can be mistaken for lingering snow banks—whence the name snow-brush. Because deer browse on lilac foliage, mountain men call it buck-brush. Some of the less thorny California *Ceanothi* have been taken to English, French and Belgian nurseries and developed into domesticated favorites of European gardens.

Because we began our exploration near Christmas time, it was natural that we meet the toyon or holly, next only to the Golden Poppy in the affections of Californians. Not a holly at all, but a rose, it has a clean foliage and bright clusters of red berries in winter. Hollywood, the notorious, was named for this misnamed holly. Horace Wilcox, the first



Composed of tree, bush and vine, the chaparral forest thickly covers the ranges.

subdivider of the fated area found it in abundance on his ranch.

Another contributor to Pacific-coast Christmas is the holly-leaf cherry. Its leaves are spiny-margined and glossy, its "cherries" are a dark red and attain a diameter of a half-inch or more. A species native to the chaparral of Catalina and other islands gets out of the elfin class occasionally to attain a height of thirty or forty feet. The "cherries" are palatable, but it was the large stony pits that interested the Indians. The squaws cracked off the shells, dried the kernels, ground them in stone mortars and produced a meal which they could boil into a gruel.

Though the chaparral is named for the scrub oak, it was some time before we came to notice it. And then we discovered a plant unlike the scrub oak we had known in the Colorado Rockies. California oaks are either "live," (evergreens) or else the foliage persists until the new crop appears. The leaves are small and round, the twigs stiff and spiny, but by the acorns you can be certain of a *Quercus*. These acorns become as much as two inches long and are borne in quantity. Francis Fultz has estimated that a thriving acre will yield ten tons. As a forest citizen the oak must be rated A-1. Its roots strike deep in the most unhospitable situations to hold back soil and water, and though burned to the ground, it will come back at once with fresh sprouts.

Valuable and vital in the same way are the sumacs. It was only after recourse to the botany keys that we could identify them as sumacs at all. They are dwarfed trees or shrubs, with simple evergreen leaves. They bloom pink and white from mid-winter to June. There are a half dozen species. One, for its hard red wood, is called mountain mahogany. Another is known popularly as squaw bush, since Indian women obtained from it fibres for basketry. Others are weighted with the name Indian lemonade-bush: this on account of their berries which can be dropped into a glass of water to make a drink quite as sour and refreshing as unsweetened lemonade. For resistance to fire and for hardihood under the most discouraging conditions nothing can top these curious Lilliputian sumacs; it is natural that the Forest Service should gather their seeds for the replanting of fire-ravaged slopes.

Of opposite character is that most abundant native of the elfin forest, the

chamiso or greasewood (*Adenostoma*). By its small, olive-green, needle-like leaves it can be known. It flourishes from sea level to 8,000 feet, fraternizing with everything else or crowding into exclusive colonies, square miles in extent. In June it whitens the mountainsides with its tiny white roses. For a rose it is—and a fire-brand. Flames race through its resinous foliage with roaring delight. And yet it tries conscientiously to compensate for its weakness. Like the scrub oak it can withdraw its life into its roots, rise as from dead and in six or eight years replenish a naked slope.

Cursed though it is with fires, caused usually by heedless humans, the chaparral has a restorative power which, for an arid land, is miraculous. Nature in her wisdom has done well, providing a tight dense garment for mountains which would otherwise be cut in no time to granite skeletons and would dump hostile torrents, gravels and boulders into the fertile valleys by which California lives. Clearly, too, the chaparral is a water-reservoir. Standing as one easily can on some mountain prominence and seeing in every direction, to all horizons, an unbroken jungle mat of water-hoarding vegetation, he realizes that but for this, the citrus empires and the gardens and cities of the valleys and coastline could not exist. Minus the chaparral the whole southwest would become one with the Mojave and Colorado deserts. (Continuing on page 45)

California holly, Christmas Berry tollen (above), and sumac (below) called Mountain Mahogany—are colorful individuals of the elfin jungle.



WHEN DEATH RIDES THE FOREST

IN SOME city, village, or hamlet an honest and respected citizen settles quietly over his pipe today, smoking out memories of a vacation in the enchanted North Woods. Lazily his mind reaches back to the clear waters he had fished, the canopy of pines and hemlocks that had cooled and sheltered him, the wide-eyed deer and lumbering black bear that crossed his trail.

To him it had been a great adventure. It had brought him closer to nature, he thought, and had made of him a better citizen. For one thing, it had sharpened his sense of self-restraint, for there were rules of safety to be observed in the forest—rules concerning campfires, sanitation, good sportsmanship. And as he recalls that he had been careful to observe these rules he is, no doubt, conscious of the warming sense of satisfaction that comes of good woodsmanship.

His arm-chair meditations, however, do not include the whole story of his adventure. No, there is another chapter. Back in the wilderness this other chapter has been added—

one that ends not in a warming glow of satisfaction, but in stark tragedy and death.

It is not a chapter that lends itself to mellowed recollections. Yet, once it is known it is never forgotten, any more than the pitiful sobbing of homeless people can be forgotten, or the death shrieks of burning animals, or the terrifying roar of a wall of flames as it races unchecked through the forests.

The honest and respected citizen, dreaming over his pipe, does not know of this chapter. That is why it must be repeated here. He will read it, no doubt, unbelieving, and with horror. This could not be a part of his story! But it is! And here is the record—the chapter added back in the wilderness:

"He chose his vacation when the carpet of the North Woods was crisp and dry from the prolonged heat of a relentless summer sun; when the valleys of the forest were so heavily laden with summer haze that a fire observer in his lookout tower could not very well distinguish smoke; when forest officers watched the skyline with foreboding and dreaded the dawn of each day with its sultry heat and dry winds.

"He entered the North Woods in the face of warnings of grave danger from fire. He was made thoroughly familiar with the rules of safety governing the use of the forest under such

Swiftly we moved in on the fiery furnace.



Photograph by Ray Molina

hazardous conditions. He promised to cooperate, to be careful, to observe to the letter all regulations. And his promise was sincere.

"These things he did during his stay in the forest—that is, until he buried his last campfire and started home. Evidently he thought the rules of safety ended there. More than likely he did not think at all. Anyway, his act of lighting a cigar as he moved swiftly down the road in his car was perfectly harmless; but when he tossed the burning match out of the window he loosed death on the forest.

"He did not know it, of course,—a careless mind never does—but his burning match fell in the dry grass by the side of the road. It flickered and died—but wait! A tiny flame! A single blade of grass ignited. A wisp of smoke! A brighter flame! Fire!

"He was miles away from the scene, no doubt, when the fire lookout spotted the smoke rising above the haze. That is how we came to know about it back at the C.C.C. camp. The lookout was still on the phone when the shriek of a siren announced that the fire truck loaded with men and equipment was on its way.

"Under ordinary weather conditions we would have surrounded the blaze and beat it down with water and sand. But on this day a strong south gale had already driven it far into the forest.

We surrendered. — * * * and fell back.



Photograph by William E. Davidson

We worked toward a circle, anyway, but a sudden gust of wind drove the flames high into the dry pines. We surrendered to this blast of heat and suffocating smoke and fell back. Our portable telephone was then set up and in a few minutes every C.C.C. camp for miles around was mobilizing for fire duty. Soon truckloads of men and equipment would be pouring into dusty forest trails from every point of the compass. After them would come the big trucks and heavy trailers, laden with the powerful 'cats' and big plows.

"Suddenly, we remembered that several farms and homesteads were directly in the course of the fire. So we moved swiftly to the rescue. We first ran into a panic-stricken family trying to evacuate but getting nowhere. The horses and cattle were still in the fields, but there was no time to gather them together and drive them to safety. We loosened a tethered calf, grabbed a pig by the ears and tossed them into our waiting truck. We helped pile a few pieces of household goods into the old family car and its dilapidated trailer—a few bed clothes, a wooden trunk, an old spinning wheel and a gilt-framed wedding picture of grandma and grandpa—that's all we

had time for. We gathered up the children, removed the reluctant parents, almost by force, and scurried to safety. We were none too soon, for as we reached a safer place we turned in silence to watch the sheaves of golden grain, the tasseling corn, the haystack, the barns and the dwelling, all the labors of a lifetime and the dreams of the future, swept up in a torrent of red flame. We heard the pitiful bawling of cattle, the squawking of terrified poultry and the death shriek of a horse. Then all was silent save the sound of the rushing flame as it roared on its way northward.

"Not once but several times was this scene re-enacted before nightfall. A dozen families were homeless and a dozen farms with equipment and livestock lay smouldering in blackened ruins.

"As we circled back we found hundreds of reinforcements already on the job. An airplane droned overhead before dropping us a message saying that the head of the fire was still two miles distant. We therefore elected to make our defensive thrust on the spot. Had it been a quiet day, we would have moved directly in on the blaze, attacking it with sand and water. But the intense heat and wind-driven smoke made this impossible. We had no choice. We had to employ the most drastic and hazardous method known to experienced forest men. We were forced to fight fire with fire—to set fire to the forest on the windward side of our road, hoping we would be able to control it while it made its way slowly against the wind to meet and check the main fire sweeping down on us.

"Swiftly our torch bearers moved up the road, igniting the brush. Sentinels, with water packs strapped to their backs, were posted at intervals, ready to pounce on any spark that fell across the road.

"The wind drove the heat from our own fire back into our faces and the smoke became so dense and suffocating that the forms of our neighbor sentinels were blotted out. We dipped our handkerchiefs in water and tied them across our faces, hoping for the best.

"We were bewildered and a little afraid, not knowing what was (Continuing on page 46)



April Rings Down the Curtain on Old
Man Winter Except in Tuckerman Ra-
vine, White Mountain National Forest,
Where It Is the Height of the Ski Season.



HIGH UP on the sub-alpine slopes of New Hampshire's Mount Washington the skiing fraternity has found a natural Snow Bowl—Tuckerman Ravine—in the White Mountain National Forest.

This precipitous glacial cirque is an amphitheater of snow and ice that provides probably the longest skiing season of any spot in the eastern United States. Shaded from the spring sun by the Hanging Cliffs of Boot Spur, the winter accumulation of snow in Tuckerman Ravine challenges expert and amateur alike from the zero days of mid-winter to the balmy days of May and June, when "shirt sleeve" and even "bathing suit" skiing becomes the vogue.

Each year the winter sports offered by the White Mountains are attracting increasing numbers. With the advent of the first reliable snow the unplowed mountain roads begin to swarm with enthusiasts, many of them conditioned in advance by the so-called "dry courses" offered in November and December by enterprising metropolitan department stores and ski clubs. Rapidly, another skiing season comes into its own with heavily patronized "snow trains" carrying cargoes of gaily clad excursionists and automobiles speeding their impatient passengers toward white trails and slopes. Drovers of skiers and lovers of other winter sports including dog sledding, ice fishing, snow-shoeing and tobogganing, coming from distances as great as two or three hundred miles, rapidly convert the "White Hills" into a carnival scene that is in strange contrast to the winter solitude of a few years ago.

Much of this upland area, with the exception of the sparsely populated intervals and State Reservations bordering the Franconia and Crawford Notch Highways, is included in the 700,000 acre White Mountain National Forest. Here, with the part-time aid of the C.C.C., the United States Forest Service has developed ski trails of all classes and lengths. On adjoining private and state lands in the area are innumerable private and public developments—some of them the finest ski trails in New England, if not in the country.

Care and accommodation for visitors presents a problem for the Service. High country cabins offer temporary protection to those who seek rest and shelter from the elements. C.C.C. enrollees have been trained for accident duty and emergency first aid equipment is stored at strategic points in ele-

S N O W B O W L

By ROBERT S. MONAHAN

vated log caches. Information on weather and trail conditions is compiled by the Forest Supervisor at Laconia and made available to the public through radio bulletins and sports pages of local and metropolitan newspapers. So popular have become the winter sports of the White Mountains that winter sports pages, some with such interesting captions as "Jack Frost's Page" or "Old Man Winter," have become established features in newspapers of the Northeast.

Daylight hours lengthen through March and the dry "powder" snow becomes transformed, alternately freezing and thawing, into a more granular structure. This is the "corn" with which the skier's heaven is carpeted and remains to the end of the season. Thousands then converge upon the high slopes of the White Mountains where April is a far cry from the vernal month the calendar normally suggests.

Prior to the advent of the Civilian Conservation Corps a few selected National Forest trails had been improved for winter use. Such wide and winding trails as those constructed for hauling fire lookout materials had been found moderately well adapted to skiing. Logging roads and former carriage roads to popular summits came also to serve this other purpose never suspected by their builders. Construction of special ski trails soon was found to be a most appropriate type of work project for the C.C.C. program. Expense was low and public appreciation gratifyingly high.

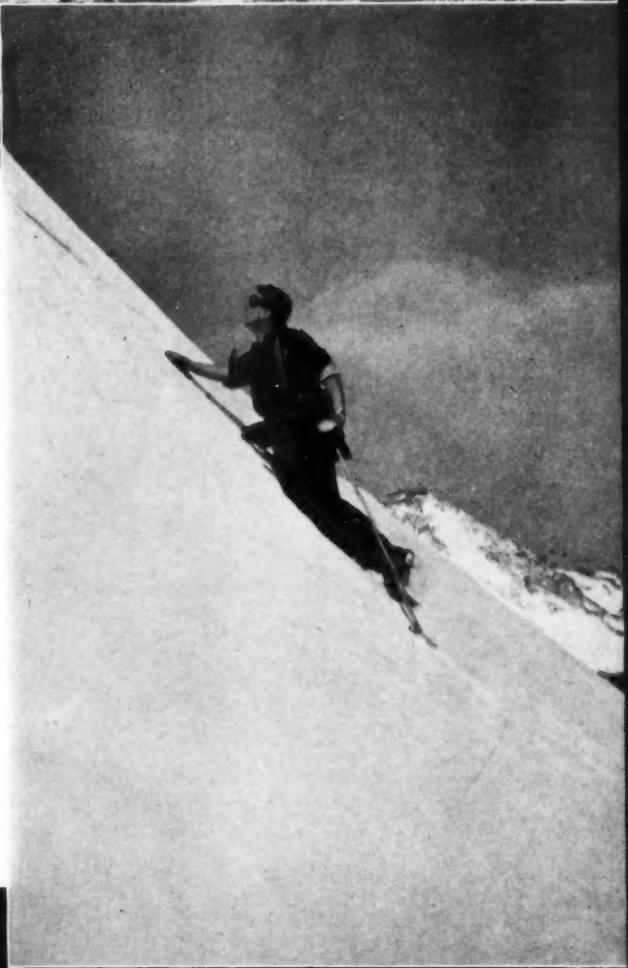


How Times Have Changed!—From Logs to Skis
On an Old Logging Road in the White Mountains.



**Like a Band of Demon Sprites,
the Ski Riders Turn Drab White
Mountain Winter into Carnivals
of Gay Sport. April Vies with
August in Number of Visitors.**

Photographs in this article are by
Robert S. Monahan; McKenzie; Forest
Service; Winston H. Pote; Dartmouth
Outing Club; and Trask's Studio.

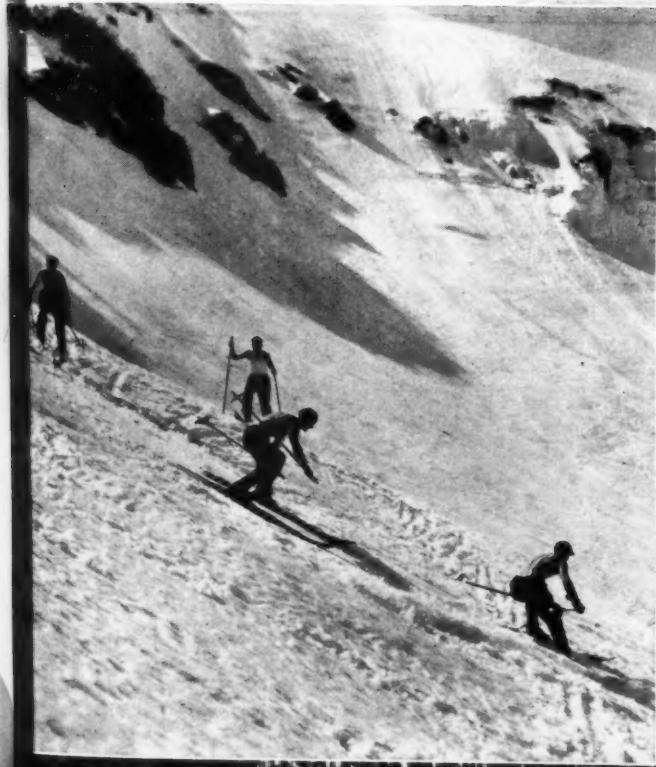




The Precipitous Headwall of Tuckerman Ravine Decides Many Sectional Championships.

And Ski Honeymoons Are Becoming Popular. The Couple on the Left Are Discussing the Trail Ahead.

Opposite Page—Colorful Ski Togs Range from Woolen Garments to Abbreviated Bathing Suits.



It is on these special ski routes carved out of the high and rugged slopes of the White Mountains, in the treeless glacial ravines and upon the snowfields above tree line that the ski riders of the Northeast congregate during the early spring season when the sport becomes most enjoyable and the participants reach their seasonal peak in form, daring and ability.

Then, melting temperatures gradually eliminate from the skier's arena all except a few favored areas of which Tuckerman Ravine is the outstanding example. Here, due to shade and the accumulated depth, the snow remains. So heavy is the travel on the two and one-half mile trail leading into the "floor" of the Ravine that it has been found necessary to make available a somewhat similar amphitheatre lying adjacent to Tuckerman Ravine and known as the Gulf of Slides. This less precipitous area also collects its share of the loose, dry snow, blown by the northwest gales off the treeless upper slopes of Mountain Washington, the only point in the world where a wind velocity as high as 231 miles an hour ever has been officially recorded.

In these huge pockets or bowls on the leeward slope of Agiochook, as the Indians named it, gambol the bizarre throngs when the late spring mountain weather is hospitable. Bizzare, indeed! Some in togs closely patterned after the models exhibited at the latest sports apparel shows; some in well worn suits that may indicate the veteran; some who obviously qualify as "equipment nuts"; and some, clad only in colorful bathing suits or abbreviated ski pants, to take full advantage of the invigorating sunshine above and the cold white snow beneath.

Liberally daubed with burnt cork beneath their eyes to lessen the glare from the glittering snow, these late season skiers resemble more a band of demon sprites frolicking in their alpine retreat than the meticulous stenographers and conventional business men they are. Perhaps this opportunity to spend a day in an environment so totally different from workaday surroundings is one reason why spring skiing has become so popular.

Certainly here is an opportunity for "release." The obscure bookkeeper becomes the cynosure of all eyes as he poises for his brief flight down the headwall. The business executive responds to the tonic of mass enthusiasm with a spirit that would surprise his office associates. Here, also, the ex-college skier has an opportunity to "re-capture" his varsity days and even improve his skill while competing for his ski club in the last races of the season. Here the sub-deb need not resort to science or travel for an early suntan. And then there are the just plain ski enthusiasts who throw everything into this thrilling bit of outdoor exercise.

The more cosmopolitan skiers are tempted to call attention to the similarity in skiing conditions with those of "glacier skiing" in the Alps and on the lofty slopes of western North America. The precipitous headwall, so steep that great masses of snow and ice occasionally avalanche down its slopes, has demonstrated its natural advantages as

a slalom course par excellence. It also provides a dramatic obstacle-stage in the annual "Inferno," a thrilling race against time by qualified experts from the 6,287 foot treeless summit of Mount Washington to the tall timber of Pinkham Notch 4,200 feet below.

Sectional championships in slalom and downhill racing, sanctioned by the Eastern Amateur Ski Association and conducted by member clubs, are frequently decided in Tuckerman Ravine and occasionally national championships in both events, granted by the National Ski Association, are held there. As the setting for such classic competition it has proved almost ideal, despite the unpredictable weather conditions and the distance from the nearest highway. Perhaps this isolation from the fanfare which accompanies most championships is the reason why the natural scenic surroundings appeal to those who have sufficient interest to climb up into the ravine.

Those acquainted with the variations of spring snow do not linger too late on the high slopes, for as the temperature falls with eventide the wet, coarse snow freezes hard. The surface which earlier in the day provided ideal conditions for executing turns may now be as rigid as concrete. Then it is that steel-edged skis demonstrate their practical value by cutting into the frozen surface, but even with these it is not well to remain too late.

Through May and June the ardent skiers return on week-end pilgrimages to the shrinking snow fields and some even "Christie" around boulders and crevasses in July to tell their friends about that last "schuss." The annual ski drama continues to attract increasing popular interest but it is the "curtain calls" of the high slopes—the spring skiing in shirt-sleeves on weathered snow—which furnish the most unique appeal.

What was formerly the drab "mud season" of the North Country, enlivened only by maple sugar-ing-off parties and disastrous freshets, is now one of the busiest times of year. At this season, hotels and resorts may be filled to capacity with very much the same patronage which throngs college towns on football week-ends. For the popular dates, reservations may be placed months in advance at such places as the Pinkham Notch Camp operated in the National Forest by the Appalachian Mountain Club for the accommodation of the general public as well as club members. The Glen House at the base of the Mount Washington Automobile Road has accommodated during the past five years more guests in April than in August! Many gasoline stations located near the late season skiing centers do a greater daily volume of business on the formerly quiet week-ends of April and May than they do in the summer season.

Each spring this paradoxical situation of skiing in temperatures well above freezing induces thousands to desert the greening lowlands and return to the snow-covered hills to bid another and another farewell to Old Man Winter on the heights where he lingers longest in his most congenial mood.

EDITORIAL



Danger Ahead

THESE ARE precarious days for conservation—potentially at least. The danger arises from the many-headed character of the federal conservation program and the conspicuous lack of any clear definition of respective fields of bureau activities. Within the past two years the situation has developed bureau rivalries more intense and imperialistic in tendencies than ever before has characterized the conservation field.

Confused and fear-stricken by overlapping authority and ambition, rival bureaus are spending an inordinate amount of time behind the scenes in scheming to get the march on one another, to extend their fields of activity, to entrench themselves with the largest possible place in the sun. In the heat of present rivalry any one of these bureaus may overplay its hand and bring itself and conservation in general into public disrepute.

This is no cry of wolf. Below the surface the public is becoming more and more sensitive to the situation. Each bureau concerned would do well

to send its scouts into the bleachers to view objectively the game it is playing and to touch elbows with the on-looking public. It might be surprised and alarmed to note the rising tide of criticism.

For the ultimate good of itself and of conservation, each bureau likewise would do well to take this growing criticism as a challenge to define as clearly and soundly as may be its proper sphere of public service and to dispossess itself of the idea that it single-handed can solve all the problems of conservation.

The conservation problem is larger than any one bureau or group. It will be solved in the best public interest by all groups working in coordinated harmony in their properly defined fields. The present situation forces the conviction that the greatest immediate contribution Congress and the President can make to conservation progress is to define clearly these respective fields of bureau responsibility and thereby outlaw inter-bureau conflict and conquest. Otherwise, danger is ahead.

Exploring a Dark Continent

NATIONAL RECOGNITION was given the Forest Products Laboratory at Madison, in November, when the results of its chemical research into the mystery of lignin won a place among ten scientific achievements selected for the Research Parade at the National Academy of Sciences in Washington. Selections for the parade were made on the basis of outstanding research, promising noteworthy contributions to industry, home and health.

Lignin has been called the chemist's Dark Continent because it has resisted so stubbornly the chemist's efforts to explore its character and to reveal its possible uses. A product of tree growth that cements together the cells of the trees and gives wood its hardness and body, lignin forms twenty to thirty per cent by weight of the wood in trees. Next to cellulose, it is the most abundant and most widely distributed organic substance of the forest.

Unlike cellulose, however, lignin is structureless and defies analysis by conventional chemical methods. Because of its mysterious character, it is today a waste product of the forest. Over 15,000,000 tons are going into the wood waste heap annually.

Frankly admitting that it has not been able to

penetrate far into the lignin mystery, the Laboratory nevertheless has forced light into this Dark Continent far enough to glimpse a substance that may provide products in the future equal to the wealth and usefulness of coal tar and petroleum.

The field of plastics from lignin alone appears to be one to challenge the imagination for possible uses. The Laboratory has found that by cooking sawdust with sulphuric acid, mixing the lignin residue with analine and furfural and then moulding it by heat pressure, the result is a heavy, lustrous, dark, well formed product that can be machined or turned on a lathe or sawed into various articles.

In addition to possible contributions to home and living standards, the Laboratory's progress in penetrating the lignin mystery may solve the long standing problem of wood waste in this country by revealing wood as too valuable a product for the waste heap. At the same time, it may make forestry profitable on millions of acres where the prospect is not now promising by increasing the wood value of growing forests. These are potential contributions which in themselves well justify the Government in carrying its lignin research to an ultimate conclusion.

LOG PIRATES OF PUGET SOUND

BY STEWART H. HOLBROOK

This nine-section boom carries 700,000 feet
of Douglas fir—a rich haul for any pirate.

A HEAVY blanket of fog hangs over Tacoma harbor on Puget Sound. From out of a dimly-lighted office on the waterfront a man hurries to a part of the wharf where a powerful thirty-foot motor boat is rolling gently in the swell. He calls down and two men come on deck. There is a moment's conversation, then the lines are cast off and the slim boat chugs, churns and slides off into the black night. It is the Washington State Log Patrol, off on a hurry-up call.

The log stealing racket isn't a new one, although few know about it unless they lived on the Great Lakes in the 1880's and 1890's, or on the timbered shores of British Columbia, Washington and Oregon in more recent years.

The great hey-day of log pirates on Puget Sound was roughly from about 1917 to 1928. It was a great and noble hey-day, too. Until 1925 there was no adequate legislation to handle the situation, and the pirates were in clover. Once in a while they would make away with an entire boom, containing, say, a million feet of logs; but usually they were content to steal a section of a boom or raft, or roughly 80,000 feet. The little fellows who worked the racket as a part-time job were happy to snitch even one or two logs.

The classic theft of all time took place on the Fraser River, in British Columbia, in the summer of 1920. Theoretically on watch in a little floating

boom house near a big raft of Douglas fir was a good-natured Swede by the name of Halstrom. The raft, he knew, was destined for a Vancouver sawmill, and he also knew that a tug was due the next morning to take it away.

Along about sundown a strange tug put into the cove where Halstrom watched the logs. He noted that it was the *Daisy Ann* and that its home port was Seattle. The *Daisy Ann* hove to at the boom house. A pleasant fellow, obviously her captain, hailed Halstrom.

"Are we heading right to get to Mission?" he asked. Halstrom told him that Mission lay a few miles up the river. One thing led to another and the *Daisy Ann*'s captain and crew of three men joined Halstrom on the deacon seat outside the boom house door. The captain finally asked Halstrom if he would like a snort.

Watching boom is a lonely sort of task, and Halstrom was really a gregarious soul and a notable drinker. He thought a snort would be pretty good. Halstrom drank. Then he drank some more. And when he was roused next morning by the Vancouver towing crew which had come for the boom of logs, he looked out upon a cove bare of so much as a stick. More than one million feet of fir had disappeared. Halstrom also disappeared without waiting for a pay check. Years later I was told by one who knew that that particular raft of logs was cut in a large Seattle sawmill.

Such gigantic thefts, of course, are rare and I

AMERICAN FORESTS

report it only to show what was possible in the days before the logging operators and millmen organized against the pirates.

Nowhere in timbered North America is there a place so happily designed for log pirates as Puget Sound. I don't know how many miles of shore line there are on the Sound, but there must be thousands. The innumerable sloughs, bays, rivers and islands lend themselves beautifully to log piracy; and before the formation of the State and other log patrols, the racket had grown into a business that cost legitimate loggers and sawmills no less than \$100,000 a year, and probably more. That's not a large racket, as rackets go in big eastern cities, but on Puget Sound it is considered important money.

Late in 1925, the Washington State legislature passed what is now known as Chapter 154—"An act to protect the title of the owners of floating logs, timber and lumber." It prescribes in detail the branding of forest products by owners, and the registration of brands with the State. It provides for penalties for dealing in "maverick" or unbranded logs, or in logs branded by another, much as did the cattle branding laws of an earlier day.

Next, the logging operators and mill owners incorporated log patrols—one on Grays Harbor and three on Puget Sound. There is a first-class story in any one of the patrols, but it would take a book to tell it, so I will deal briefly with one of them, the State Log Patrol which has its headquarters in Tacoma and whose boats patrol the busy Tacoma-Olympia-Shelton district of Puget Sound.

The State Log Patrol went into action on February 1, 1928, with W. E. Craw, a former captain in the Everett Police Department, as manager. Previous to announcement of the patrol's formation, Captain Craw spent three months investigating the ramifications of log pirates. His findings were positive and somewhat startling. Working with operatives posing as boom-men and log-pond men, he uncovered a ring of log thieves that included the owner, general manager, superintendent and head boom-man of a respectable sawmill concern of Seattle. These fellows had been doing jobs on a large scale, stealing entire sections at a time and cutting them in their own mill. Prosecution followed and convictions were secured.

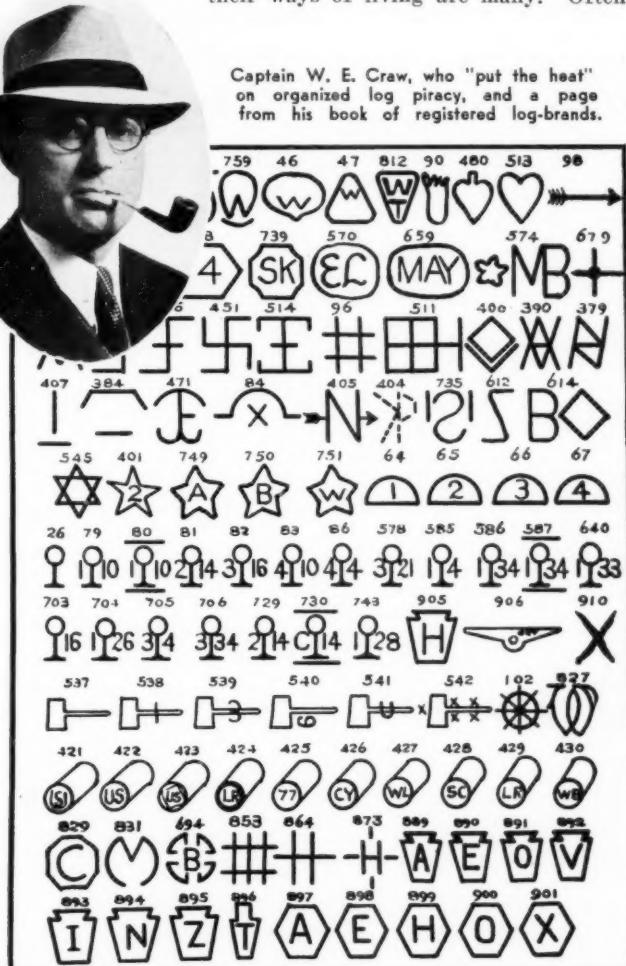
Captain Craw also found that the officials of one county on Puget Sound were in league with and getting a cut from the local log pirates. So he had himself commissioned as a deputy sheriff in five counties in order to make arrests without tipping his hand to local law officers.

He obtained eight fast tug boats. On each of these he placed a powerful search-

light and two determined men armed with rifle and revolver and a deputy sheriff's badge. These men had to be—and apparently they were—a combination of navigator, mariner, policeman, detective and sea lawyer. Each boat had its particular district to patrol, and part of the business was to check up on sawmills and observe the appearance of the logs they were cutting. A number of small and medium-sized mills were notorious for operating with "hot" logs, for which they paid about a fifth or less of the current market price.

Captain Craw, dressed as a hunter or fisherman, usually operated alone in a little sixteen-foot speed boat which carried a thirty-two-horsepower outboard motor and could make twenty-five knots without trouble. He had the opinion, which proved a good one, that stealing could best be discouraged by "turning the heat" on mills he suspected of cutting stolen logs. He found twelve in his district of the Sound. When he could, he put operatives at work with the pirates. When he couldn't he took to dropping in at awkward times and catching them with logs for which they couldn't account. Then, there were the beachcombers, men who usually refer to themselves as stump-ranchers. They live in shacks on tidewater and their ways of living are many. Often

Captain W. E. Craw, who "put the heat" on organized log piracy, and a page from his book of registered log-brands.



they were content to pick up a stray log now and then which had jumped some raft being towed by. The more ambitious would sneak up on a raft tied up on shore when the tide was in. They would take out the boom-chains which held the corners of the last, or outer section of logs. When the tide turned, the section would open and anywhere from 10,000 to 80,000 feet of logs would be carried out where they could be corralled several at a time and taken to the beachcomber's favorite cove.

Once safely in his snug harbor, there were two things the pirate could do. He could laboriously saw off the branded end of every log and then brand them with his own registered and legal mark or with the brand of the bootleg mill with which he did business; or he could take a home-made branding ax and so mangle the original owner's brand that the devil himself couldn't have said what the mark had been. Then, of course, he would apply his own brand to the log ends.

Thus rebranded, the pirate

could not be convicted in court, or at least not on any evidence supplied by the logs themselves. But in log piracy, as in almost all other forms of crime, there is always something to tell the tale, and in more than one case in the region of Puget Sound it has been a boom-chain.

A boom-chain is used to hold two logs together and thus form part of a raft, or boom. It is about four feet long, weighs some seventy pounds, and has a ring on one end, a toggle on the other. They are worth around six dollars apiece to the pirate and are consequently valuable secondary loot. And it's difficult to steal and move more than a few logs without boom-chains.

In 1929 Captain Craw was trying to get some evidence against a Puget Sound waterfront character known as "High-Pockets" Peterson. He knew that Peterson was stealing logs, but Peterson had managed to keep out of the hands of the patrolmen. Then, "High Pockets" made away with a big batch of boom-chains. The captain, after a good piece of detective work, trailed him to Seattle, where Peterson left the chains in a small blacksmith shop on the West Waterway.

The officer went to the King County courthouse to get a warrant for arrest of the blacksmith and Peterson. When it was served on the smithy a day later, it was discovered that not a single chain in

the shop carried an identification mark on it.

This was curious, because all boom-chains around Puget Sound are marked with the owner's brand stamped into the toggle, and the brand is registered with the State just as the log brand is. But all of the chains in the shop had toggles clean and smooth and free of any mark.

Fortunately, the log patrol captain knew something about iron. He took one of the unmarked chains to a convenient emery wheel and had an assistant hold the smooth toggle against the wheel a moment while the sparks flew. When he looked at the toggle again there appeared as though etched in black on silver the pattern of an eight-

spoked steering wheel. This was all that he wanted to know. Referring to his book of registered brands, which he always carried handy in his coat pocket, the log patrol captain found that an eight-spoked wheel was Brand No. 102—and No. 102 was registered by the Cavano Logging Company, with headquarters in Seattle.

Whether or not the blacksmith knew it, it is a fact that merely heating a piece of iron and then pounding it smooth with a hammer on the anvil will not remove the brand from the grain of the iron. Invisible to the naked eye, an emery wheel will bring out the hidden mark in an instant—as the blacksmith and "High-Pockets" found out in King County court. The dramatic evidence uncovered by the whirling emery and the captain's ingenuity convicted them.

Getting back to the primary racket of the Puget Sound log pirates, there has been a revival, slight but marked, in the past twelve or fourteen months. As this is written, No. 1 peeler logs, which are the highest grade and are used in the manufacture of plywood, are selling for around twenty-six dollars in the open market. An average peeler log will contain about six thousand feet, log scale, and is worth, say, about one hundred and fifty dollars at the mill. A bootleg mill will pay possibly twenty dollars for it.

A few years ago, when log prices were as high as they are now, two men working out of a cove on Whidby Island, in the Sound, made eight thousand dollars one fall and winter. That's big money for two stump-ranchers just trying to get along in the world. But they were caught red-handed one night.



Another time, Captain Craw's men intercepted a delivery of no less than 200,000 feet of stolen logs, and good ones, too—the work of four men and a thirty-foot gas boat.

But even with peelers at twenty-six dollars, it is unlikely there will ever be any more big-time log piracy so long as the State of Washington and the other patrols are even partially active.

A dozen years ago it was difficult to go into court and prove ownership of a stick of timber, once it had become a log instead of a tree. All that is past now. On file at Olympia are no less than 1,095 registered log brands. Letters, numbers and combinations of the two are used. Then, there are squares, circles, diamonds and triangles.

Some of the character brands are as gaudy as anything ever conceived by imaginative writers of "western" cattle-range fiction. The Schafer Brothers Logging Company of Montesano has a six-pointed Jewish star. The Cascade Timber Company of Tacoma brands a bearsfoot mark on its products. Other brands depict an ax, a butterfly, a hat that looks for all the world like a brown derby, a wine glass, a circular saw, and several designs which could have been conceived, it would seem, only in the mind and eye of a wild modernistic artist on a ten-day spree.

Important, too, are the catch-brands. These are a secondary line of defense against the Puget Sound log pirates. For example, say that Brown, a logger, sold a boom of logs to Smith, a sawmill man. The logs, at Brown's camp, were branded with Brown's registered mark—that is, his letter, number, square, diamond or triangle, as the case may be. Before Smith's towing outfit starts to move the logs from Brown's camp to Smith's mill, they stamp Smith's catch-brand onto the log ends. Thus the subsequent ownership is made legally clear. Catch-brands differ from all other brands in that the dominant part of the mark is in the shape of a large letter "C."

The open cattle range is almost a thing of the past, even though cattle still are branded. A number of volumes could be written on the story of its passing, but the one definite factor that marked its end was the miles and miles of barbed-wire fence that spread over the grasslands and foothills. Barbed-wire fences are hardly practicable, however, on the broad open waters of Puget Sound, so the Sound will always be open range.

But the log patrols, backed by a law which has teeth in it as long and sharp as a pickaroon, and aided by an elaborate system of registered

brands, as well as a secondary system of catch-brands, which is all but unbeatable, have wiped log piracy, as an organized racket, pretty much out of existence in the region around Puget Sound. And this means the country at large, for as already stated, the day of log piracy in the region of the Great Lakes reached its peak in the 1880's and 1890's.

True, there are still those tidewater stump-ranchers who will undoubtedly continue to take a chance now and then, when the fog is low and heavy over Puget Sound, or when the night is dark, but they have to work fast to beat Captain Craw and the Washington State Log Patrol. And besides, there's the matter of boom-chains and their indelible and tell-tale brands set deep into the iron.

So, even if peeler logs are selling for twenty-six dollars a thousand feet, it is rather difficult to see anything unduly optimistic ahead in the log stealing racket along the timbered shores of Washington, Oregon and British Columbia. It might be good advice to the Paul Bunyan pirates, everything considered, to stick to the job of digging clams.

The boom-chain had been pounded smooth—but an emery wheel dramatically revealed the hidden brand.





Jivaro fish hunter.

who in 1907 left his mother earth long enough to be presented to the Pope in Rome, nor in the customs of head-hunters. The thing that had lured us so far into the Ecuador jungle was an invitation to join the Jivaroës in a barbacoë fish hunt. We had heard of this hunt, participated in by the Jivaroës whenever the pangs of hunger became too great, and knew that we were in for an interesting experience. For the barbacoë method of fishing meant considerable ingenuity with one thing—poison. So as we greeted Bosco we were an eager lot. He conducted us without much show of ceremony, but with a certain degree of friendliness, to his *gea*, a large, artistically laid out palm thatched dwelling in which he lived with his family. About the *gea*, we noticed, were fields of yucca, cultivated camotes, papayas, bananas and—barbacoë.

The last named, of course, held our interest. It is from this source, the roots of the barbacoë plant, that poison for the Jivaro fish hunt is obtained. The plant is ten feet or more in height with densely leafed branches. Its roots, we were told, formed long

THE HEAD-HUNTER GOES A-FISHING

By WOLFGANG von HAGEN

WE crossed the Rio Bomboisa, the highest of the headwaters of the great Amazon, to the *gea* of Joaquin Bosco, a Spanish speaking Jivaro. Our interest was not so much in this strange native, a head-hunter who had been raised by the Padres and

vine-like stems that reached very far into the earth.

Already the women were preparing for the hunt. They were cutting away the bark from the roots of the barbacoë and beating the fibre until it became easily permeable in water. The men, too, were busy. They were preparing the river below the *gea* for action.

Accompanied by Bosco, we wandered down to watch them, somewhat perplexed by the many activities. The first group we came upon were building a wall across a small tributary stream by piling stones and filling the fissures with banana leaves. Bosco explained that this was done to direct all floating material to the fish beds that were soon to be placed.

In these beds the woods craftsmanship of the Jivaroës was most apparent. A long slender river reed was used for the entire structure. These were placed in position a quarter of an inch apart, forming beds six feet in length and three feet in width. Supported on rocks, the beds were made secure by tying them with bark rope to posts imbedded in the river. Water flowing into these traps passed out through the small crevices, and anything floating on or near the surface was deposited there.

The morning had almost passed when the beds were completed and the women, carrying their baskets of barbacoë bark suspended with a line about their heads, began their dog-trot to the

Off for the hunt on the Rio Bomboisa.
Inset, leaves of the barbacoë plant,
which has the power of stunning fish.



river. The bark seemed thoroughly mashed, and had a strong odor.

Then the word was given for the hunt to begin. In order to understand what was about to happen more clearly, we repaired with Bosco to one of the beds, but near enough to the other activities to see everything. First, the men and boys entered the flowing stream with the baskets. The women and the more elderly men were assigned places at the fish beds. Then, at a given signal, the men and boys dipped their baskets of barbacoa under the surface of the water.

Frankly, we were skeptical. It seemed exaggerated, this poisoning of fish in a deep,

citing laboring of bodies. The fish were now coming to the surface in great numbers. Fish beds, cunningly placed, were receiving them so fast that the women were having a lively time getting them out into the baskets.

Presently, the men in the stream stopped dipping their baskets, their experienced eye telling them that enough fish were floating on the surface of the water to satisfy their need, their hunger.

By late afternoon the barbacoa fish hunt was over. Twenty large baskets had been filled and carried to the *gea* by the women. The fires were already burning. On our way back to the feast we questioned Bosco as to the origin of this

strange method of fishing, particularly about the discovery and use of the barbacoa bark. But he could tell us nothing; nor could any Jivaro we questioned.

When we arrived at the *gea* the fish were being made ready for baking. Bosco led the way to a number of crude stools and told us to be seated. Almost immediately a number of women detached themselves from the workers to offer us a bowl of *nijamanchi*. This was a sour, heavy, fermented drink made from yucca. It was not altogether pleasant to take but obviously most nutritional as a Jivaro will drink more than five quarts a day.

The fires by this time were right for baking and the women busied themselves with the fish, folding each one in a banana leaf. This they placed in the hot coals. When the leaf was well burned it was quickly removed, opened, and the steaming fish placed on another leaf. In this manner we, as well as the others, were served.

Satiated by the things we had seen and eaten, we sat, our backs against the wall of the giant jungle dwelling, and watched the shadows of its head-hunting people as they moved about the fire, preparing for the night. Few words passed between us; we were content to review the astonishing events of the day, to be a silent part of the strange quiet that was all about us.

The chief had surrendered his couch to us for the night and we settled down, to sleep without fear in the bed of a head-hunter of the Amazon.



Building a fish bed of river reeds.



The feast in the "gea" after the hunt.

swiftly flowing stream.

The line of men across the stream continued to dip their baskets in the water and we noticed a milky white substance, given off by the barbacoa, appearing on the surface. Five minutes passed and nothing happened, except that the white substance became heavier. Six minutes, seven, and then, with a lively shout, a small boy dived into the water and came up splurting with a large fish in either hand. We gasped. The poison was beginning to work.

In a few minutes fish were coming to the surface. At first, to our inexperienced eye, only the smaller forms were visible. Apparently stunned, they floated on their sides, but still with enough power to move away from grasping hands.

Everywhere there was activity, a joyous, ex-

WESTERN HEMLOCK

Tsuga heterophylla (Rafinesque) Sargent

By G. H. COLLINGWOOD



WESTERN HEMLOCK, a tree of increasing economic importance, is found in the deep forests of the humid coast regions from Prince William Sound in Alaska for a thousand miles to Marin County, California, just north of San Francisco, and inland as far as northern Idaho and northwestern Montana. It grows best in cool, moist locations on the seaward side of the Cascade Mountains, at elevations from 1,500 to 3,500 feet above sea level, but ascends from sea level to altitudes of 6,000 feet.

Growing to greater dimensions than its eastern relatives, this tree under favorable conditions may become 130 to 150 feet high and from seventeen to twenty-one inches in diameter in one hundred years. Occasionally, western hemlock reaches an age of 500 years or more, when it develops to heights of 175 to 250 feet with diameters ranging to eight or ten feet.

Everywhere it is a dignified tree, with grave and massive outline, but in the dense forest the crown of irregular, slender, pendulous branches is narrow and pyramidal. The long, clean, cylindrical trunk has little taper, and the base is often suddenly buttressed. Open grown trees have a broad crown which may extend to the base of the trunk. Being tolerant of shade, it clears its trunk of branches somewhat slowly.

The flat, narrow, distinctly grooved leaves are a dark, highly lustrous green from one-third to three-fourths of an inch long. They remain on the branchlets three to six years. Closely resembling the leaves of eastern hemlock, the ends are distinctly rounded and the two bands of white stomata on the under side of each leaf are less well defined. *Tsuga* is the Japanese name for hemlock, while *heterophylla* is derived from two Greek words meaning other or different leaves. Apparently it was applied by Rafinesque in an effort to indicate the slight distinguishing differences of the leaf from that of *Tsuga canadensis*, the eastern hemlock.

Male and female blossoms are borne separately on sprays of the preceding season, on different parts of the same tree. Yellow, pollen-bearing, male flowers grow singly at the base of leaves near the ends of the branchlets, while the small, purple, sealy female flowers are at the ends of the sprays.

By the middle or end of August, the reddish clay-brown cones which develop from the pistillate blossoms are mature and ready to discharge their winged seeds. These cones hang from the ends of the branchlets, are nearly twice the size of those of eastern hem-

The largest of eight hemlock species, attaining heights of 150 to 250 feet, and diameters up to eight or ten feet.

lock, being three-fourths to one and one-fourth inches long, and are more acutely pointed. Each cone is attached by a short thread-like stem, and drops during the succeeding winter. The thin, overlapping scales are faintly downy on the outer surface. Under each scale may be two light brown seeds, about one-eighth of an inch long, whose ample wing carries them considerable distances on the wind.

Open grown trees begin to bear seed when twenty-five to thirty years old, but those growing in dense forests at a much older age. Some seed are produced nearly every year, but heavy crops occur at intervals of two or three years. The seed, which are borne in large amounts, are fairly high in germinative ability, retain their vitality for several years, and develop best on wet moss, decaying wood or moist humus. This tree reproduces freely under a variety of conditions, and while the seedlings can endure dense shade, they grow more rapidly in the sunlight.

On old trunks the dark russet-brown, deeply furrowed bark may be one and one-half inches thick. It is even richer in tannin than that of eastern hemlock, having twelve to fifteen per cent, as compared with ten to thirteen per cent for the eastern variety.

The pale, yellowish brown heartwood contrasts with the narrow area of white sapwood, and weighs about twenty-nine pounds to the cubic foot when air dry. It is heavier, harder, and stronger than the wood of eastern hemlock, is less splintery, and because of its soft, fine, non-resinous texture and straight grain is finding an increasing demand in commerce. The wood is relatively resistant to attacks by termites, but is not durable when used untreated under conditions that favor decay. When commercially dry it is suitable for all but the heaviest construction work, and is extensively used for framing material, house sheathing, planing mill products, boxes, barrels, railroad ties, concrete forms, and is rapidly becoming one of the most important pulp woods grown on this continent.

The total stand of western hemlock in the United States is estimated to be some 150 billion board feet, of which sixty billion feet are in Washington and sixty-three billion board feet in Alaska. In 1934 the cut amounted to 242,933,000 board feet, of which over 200,000,000 board feet came from the forests of Washington. The peak of western hemlock production was reached in 1927, when 1,418,000,000 board feet were cut.

The comparatively thin bark and shallow root system make it highly susceptible to fire injury and to wind fall. While less frequently damaged by "wind shake" than the eastern hemlock, it suffers heavily from insects and fungi, against which little can be done.

Its ability to withstand shade makes it desirable for ornamental purposes, but it does not thrive in the central and eastern states.



Round tipped, flat, glossy green leaves, and narrowly pointed, pendant cones three-fourths of an inch to an inch and a quarter long.



The deeply furrowed russet-brown bark is over an inch thick and rich in tannin.



The natural range of Western Hemlock extends along the Pacific Coast into Alaska.

ALONG THE TRAIL

OLD AGE IN THE WILD

Naturalists and woodsmen claim that it is only on the rarest occasions that the body of a wild animal is found dead in the woods of natural causes. Why this is so is a disputed question, some maintaining that an animal, knowing the end is near, will crawl into a hidden spot to die, while others argue that the reason more carcasses are not dis-



So old he could not eat.

covered is because they are immediately eaten by other wild animals.

The above photograph is, then, rare indeed, for the large buck lying in the snow died of old age virtually before the very eyes of Levi Smith, scaler for the Brooks-Scanlon Lumber Company, at Bend, Oregon. Scaler Smith, busy cruising out strips for the next day's falling, noticed the big buck struggling through two feet of snow. The deer fell several times and Mr. Smith waded through the snow to see if it had been wounded. No marks showed on the animal and the woodsman went back to get help.

A party left immediately in an effort to rescue the deer, packing in a bunch of hay. But when they arrived at the scene the buck was dead. Examination showed that only four or five teeth remained in the animal's head and these were so loose that they could be pulled out with the fingers. The deer had been unable to eat anything for months and had slowly starved to death. All four hoofs had grown out to unbelievable lengths, showing that the buck had probably not traveled more than a mile in the past year. It had shed its horns a couple of weeks before.—Paul Hosmer.

AUDUBON'S HOME PARK

Tradition has it that Henderson, Kentucky, did not have patience with its famous vagabond citizen, John James Audubon, and upon occasion used to clap him in the town lockup. A shiftless person, they pro-

nounced him, who would not tend to business, but left his general merchandise store in charge of his partner while he went wandering in the forests in search of birds and plants. But now Henderson delights to honor her distinguished citizen.

There are Audubon memorials throughout the city, the latest and most important being the Audubon Memorial Park, a state park established with Federal aid, the work being done by the C.C.C.

It is a scenic park of natural charm, with age-old forest trees—oaks, elms, beeches, sweet-gum—the same trees beneath which Audubon used to roam in pursuit of birds. The beech grove is still here, in the midst of which stood the historic tree on which Audubon carved his name and date, "AUDUBON 1814." The tree was long ago cut down, but the section with the carving, now grown faint through the years, is preserved among other Audubon relics in the collection of the Henderson Historical Society.

The park is a natural bird sanctuary, and more planting is being done for the birds, trees and shrubs that provide food and shelter. The nucleus of the park was one hundred acres donated by David Clark, an ornithologist of Henderson, who had devoted the area to sanctuary purpose.—Lorraine Letcher Butler.

LIFE OF A COCONUT TREE

What is the life span of a coconut tree? Judging from available records, one grove is still flourishing after 150 years.

On the site of the Royal Hawaiian Hotel on the beach at Waikiki, Honolulu, is a beautiful grove of coconut trees reported in archives records as having been in existence since 1794, at which time the trees were reported to be of mature size.

The site is that of the old residence of kings of Oahu. There kings and queens and their royal attendants lived through Polynesian days and nights. This tranquility was rudely interrupted in 1795 when Kamehameha I came from the island of Hawaii, 200 miles to the southeast, and defeated the Oahu army. Kamehameha then made this grove his residence. His descendants lived there until 1874 when the dynasty died out. Trees still standing in the grove are said to be part of those standing when Captain James Cooke discovered the islands in 1778.—William Atherton DuPuy.

LAST WHIPPING TREE

A huge white oak tree, its trunk misshapen, its bark furrowed by age, stands on a street corner in Alfred, Maine, traffic surging about it, much like the oaken bulk of some old ship cast up on the beach and battered by the tides. Decrepit and deformed as the tree is now, there was a time when it was not only rugged and handsome but a thing of dread and fear. For few there were in York County who did not know it as the "whipping tree." Men who know trees say that this oak is several hundred years old. If so it must have been a good sized tree in the seventeenth century when, according to the records filed in the courthouse a quar-

ter mile away, sentences imposed by the courts were first executed beneath its branches. Public floggings were common in those days—the punishment usually meted out for such offenses as kissing in public, scolding, nagging and otherwise disturbing the peace. Jealous wives who made life disagreeable for their spouses were frequently taken to the whipping tree and given something real to sputter about. Swearing, drinking husbands were as often persuaded to better things in the same manner.

Both men and women when taken to the whipping tree were stripped to the waist, their hands tied above them to the trunk, and lashed on the "bare skin" with the number of stripes designated by the judge who had imposed sentence, usually in the presence of a jeering crowd. The court records are full of such instances, one of the earliest being that of Joanne Ford, who besides the usual number of stripes, was given nine additional for having called the constable a "horny-headed rogue."

Frances Hilton "raved at her husband" and Joan Andrews was pronounced "an infamous scold and a breaker of the peace." Both were punished beneath the whipping tree. As late as 1804, Andrew McGee was convicted of having stolen a silver watch and John Williams of having stolen a mare.

In 1797, John Atwood forged notes, was discovered and punished by being placed in the stocks for one hour and publicly whipped on his naked back with twenty stripes, exactly five less than the number which the court awarded Joan Andrews for scolding.

By 1830 the tree was quite out of use, jail sentences having become more popular with the courts. The old oak, however, lived on, as did the stories of the dramatic scenes, once enacted under its boughs—stories that were confirmed by the court records when, in the fall of 1929, the New Century Club of Alfred placed a bronze marker on the tree to show it was the only whipping tree left in New England.—Mary Carpenter Kelley.



Twenty-five lashes for scolding.

ROADS AND TRAILS AT LOWER COST

- In the San Bernardino National Forest near the "Arrowhead" natural landmark, this "Caterpillar" Diesel Auto Patrol is scarifying worn surface on a forest service road. This machine is one of 41 purchased by the U. S. Forest Service, in July, 1936. They are used for maintaining forest trails and roads—so that men and materials can be moved speedily and safely.

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READERS' FORUM

WANTED—FIRE LAW ENFORCEMENT

"I would like to quote from a letter that I have written to the State Forestry Department, at Tallahassee, in regard to the great destruction we are having in Florida from forest fires set by a low class of cattlemen who own no property but allow their stock to run on the open ranges:

"It is deplorable to experience such efforts as are being made to destroy the forest and wildlife this season by firing the woods, mostly by the lowest class of parasite loafers who inhabit this country.

"For many years I have been trying to protect the forest, building fire tracts, patrolling the woods, fighting fire even on other people's land. Yet it has accomplished nothing. They come back and burn the woods as soon as we put out the fires. I have gone so far as to keep a truck with men ready to patrol the woods two or three times a day. Still they have gone on my premises and set fire that endangered the best timber on the land. I offered a reward for convictions, but not a one has been caught.

"I understand that the State Forestry Department recently was forced to extinguish fifteen fires in the same tract of timber in one night. This shows the determination, regardless of all expense the State is going to, that these open range cattlemen and others have in burning the woods."

"I am well aware that large sums of money have been spent to educate people and protect forests from fire. And, in my opinion, a large majority of the population of this country is opposed to forest fires. But there is a low class of people who destroy. Although in minority, one of their number can destroy millions of feet of timber by fire. This is the man who is doing the ugly work in Florida. He has no conscience, no principle, no patriotism, and he is a parasite as well as a criminal. There is no use dealing with such a man in mild terms. He must be punished.

"To check this willful and ugly woods burning in Florida, and elsewhere where the

circumstances are the same, my idea would be, if I had the money to spend, to offer rewards for convictions. If the government would spend money this way, it would do a lot of good. Florida has a law making it a felony to fire the woods—a law that I helped pass when a member of the State Legislature. But the political situation in the State is of such a nature that it is almost impossible to get an arrest, much less a conviction.

"I have written Senators, Congressmen, everybody I know in Washington to help stop this crime against nature, but it seems as if there is some excuse always and nothing can be done. I think the Association should band together and not support anybody who makes the Federal laws, or any other kind of laws, who will not come out and do his best to create a Federal law to punish these violators."—J. D. Smith, Mariana, Florida.

PUBLIC vs. PRIVATE INTERESTS

"Different numbers of your publication have of late interested me much. One reason is that you seem to be more level-headed than many sources of publicity, to be trying sincerely and patiently to get at the right thing.

"The account of the O and C lands (Oregon Checkmate—April, 1936) was noted. With great public interests going that way, what justification is there for lambasting private ones, and should we turn over more and more of our vital affairs to public management? I confess that my own prepossession for the other thing grows stronger, and there are few figures that I think of as more ominous than the man in important public place perfectly sure of his ideas, determined to put them through while he has the chance and regardless.

"We've got a lot of that kind in public life today. Really it seems to me we would do well to hold up on progressive measures until the tone of public life is quieter and saner."—Austin Cary, Lake City, Florida. (Written just before Mr. Cary's sudden death, and mailed after his death.)

IN THE NAME OF "SPORTSMANSHIP"

"I am still a doubting Thomas about conservation; I have had too much actual contact with sportsmen (!), guides, game wardens and such during the past thirty years to be too great an optimist on the subject. I began my wails long, long ago. I have watched the pollution of little, friendly brooks and gentle rivers. I have seen game wounded and left to die in agonies by people that were not fitted to enter the woods. Oh, I have watched it all with a sorrowing heart.

"I have tried to organize the sportsmen (!) of my community. I have written reams—much of it has been published. Blah! It amounted to nothing. The great majority will listen, and talk well and favorably about a sensible program for conservation, both farmers and sportsmen, but when the open season comes and they have a gun or rod in their hands, they say: 'Well, it's going fast,—too late to save 'em now, so I may as well take 'em before the other fellow does.' And, there you are.

"The automobile has been the curse of New England's woods and waters and is the prime factor in game and fish scarcity. The trout in little waters went first, of course, as cars could drive to all streams and ponds. The fish must eat some time. With the grouse it was different because they had no limits to hold them and it requires some skill to bring them to bag and some knowledge of their ways. Why, I have seen cars following a truck that was placing legal-sized trout in Massachusetts waters on the opening day. The truck would halt beside some open water and dump in two or three cans of legal size trout and as soon as the truck left, eight or ten rods would go into action snaking out the liver-fed, tame, seven-inch trout released two minutes before.

"If there is one tiny wilderness left, the C.C.C. will open roads into its very heart. The sportsman pays out hundreds of thousands of dollars to plant game and the C.C.C. spends hundreds of thousands to destroy the protective covers that are the very life of our birds and smaller game animals. I do not blame the C.C.C.—it was a fine thought, nobly conceived but, oh, so poorly supervised!

"I cannot bear to walk the old paths now—they are strewn with the refuse of an ignorant, selfish and decadent population."—John Phelps, Northfield, Massachusetts.

TREES AND THEIR USES — No. 21 — WESTERN HEMLOCK

WESTERN HEMLOCK CLOSELY RESEMBLES EASTERN HEMLOCK, BUT ATTAINS LARGER SIZES, REACHING HEIGHTS FROM 125 TO 250 FEET, AND OCCASIONALLY DIAMETERS OF 8 FEET TO 10 FEET. STRONGER AND MORE DURABLE THAN ITS EASTERN RELATIVE, IT IS MOST ABUNDANT AND REACHES ITS LARGEST SIZE ON THE SEWARD SLOPES OF THE CASCADE MOUNTAINS IN WASHINGTON AND OREGON.

WESTERN HEMLOCK IS THE ONLY MEMBER OF THE HEMLOCK FAMILY LARGE ENOUGH TO SUPPLY COMMERCIAL QUANTITIES OF BEAMS 2 FEET SQUARE AND 20 FEET LONG. THE BARK IS HIGH IN TANNIN CONTENT, AND IS USED FOR TANNING LEATHER.

FROM THE INNER BARK, THE INDIANS OF ALASKA OBTAIN A VEGETABLE FOOD, OR "BREAD" SUITABLE WHEN OTHER FOODS ARE SCARCE. FROM THE ROOTS, THE RED MEN FABRICATE FISHING HOOKS FOR CATCHING HALIBUT.

IN ADDITION, WESTERN HEMLOCK IS THE MOST IMPORTANT WEST COAST SOURCE OF PULPWOOD AND INCREASING AMOUNTS ARE BEING SUPPLIED THE PAPER-MAKING INDUSTRY.

FOREST FIRE INSURANCE FOR NAVAL STORES TIMBER

The first steps have been taken in the development of a fire insurance plan for forest crops which promises to be of far-reaching importance to naval stores timber growers in the South, according to Joseph C. Kircher, southern regional forester for the United States.

On August 1, representatives of the Farm Credit Administration, the Federal Land Bank, the State Forester of Georgia, and the Atlanta Branch of the Hartford Fire Insurance Company held a conference with Mr. Kircher and representatives of the Regional Office of the United States Forest Service. At this meeting details were discussed of a proposed program under which money would be loaned on naval stores operations and be protected by insurance coverage on same. The Farm Credit Administration is desirous of aiding the naval stores timber growers in accordance with the law permitting the extension of the A.A.A. payments to this class as timber farmers and at the same time deems it advisable to have its loans guaranteed against loss by fire, so the Hartford Fire Insurance Company was requested to write insurance for naval stores trees. The Hartford Company agreed to do this, but since it is a pioneer field, the insurance company has been careful to obtain the advice of the United States Forest Service and the several state Forest Services. It is the plan to offer best rates on land, protected from fire under cooperative agreement between the landowners, the state and the government.

Insurance policies will be conservative since they will pay losses only where fire completely destroys the productivity of the timber, from the naval stores standpoint, to the extent of thirty per cent or more over the period of the loan, or where fires reduce the naval stores productivity of the timber more than thirty per cent over a three-year period. Loans are not made on any trees under eight inches in diameter. While it would appear that the insurance company is not likely to sustain any considerable loss as a result of damage payments, the plan will accomplish its purpose in permitting the landowner to obtain his loan at greatly reduced rates of interest and will give the bank the guarantee which it requires.

Forest fire insurance, if successfully carried through, will be of tremendous assistance in obtaining fire protection for private lands. Those who wish to secure these loans will find that it is an advantage to provide the fire protection recommended by federal and state agencies, because failure to do this will result in increased premium costs for fire insurance, or in the refusal of loans. Under the present plans a timber grower who wishes to obtain a loan from the Farm Credit Administration will be obliged to state the steps he is taking to protect his timber from fire. He will also be required to furnish a statement from the local state representative, such as the district forester or county warden, concerning the adequacy of his protection efforts and giving suggestions for any additional steps or improvements necessary to provide adequate protection. This statement will be taken into account by the bank and by the insurance company in determining whether or not to make a loan and the amount of premium.

If this program of fire insurance becomes successfully established, the Southern landowner will be relieved of one great hazard to a successful timber growing enterprise. Other benefits also promise to accrue from this program as the Farm Credit Administration, in addition to the requirements for fire control, will require good naval stores practice throughout the woods operation.



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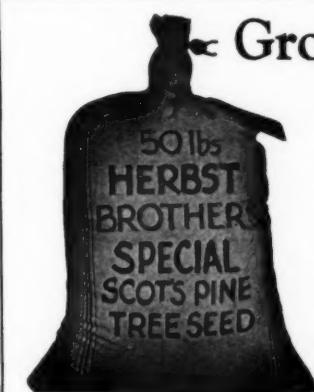
Above is shown one of their patrol trucks with the INDIAN FIRE PUMP included as fire fighting equipment. This is typical of hundreds of such Forestry Service trucks which carry INDIANS.

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The College has ample laboratories and classrooms in William L. Bray Hall and the Louis Marshall Memorial Building. It has forest properties approximating 20,000 acres that serve for demonstration, research and instruction in forestry.

Special laboratories for instruction in wood technology, in pulp and paper-making, in kiln-drying and timber-treating and a portable sawmill are other features of this institution.

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NEW SKI CENTER

America's new ski center—Sun Valley—in the Sawtooth Mountains of south central Idaho, was officially opened December 21.

According to W. Averell Harriman, chairman of the board of the Union Pacific Railroad:

"Sun Valley is the superior of the Austrian and Swiss Alps for skiing and other winter sports. The Union Pacific here is making a pioneering stride in developing America, a part which the railroads played so well in earlier days.

"We have gone into a virtually undeveloped section of the West, rugged in setting, invigorating in climate and beautiful in scenery. We believe skiing in America will be shown here to new advantage."

Among the attractions which Mr. Harriman pointed out were downhill ski runs of two miles and more, ski chair lifts running up the mountains and a ski school with a staff of Austrian professionals.

"An unusual feature of Sun Valley will be outdoor swimming in midwinter. Two outdoor warm-water swimming pools and an equable climate in the sheltered valley with an altitude of 6,000 feet, make this possible. Sun bathing in roofless ice igloos, and uphill skiing—stripped to the waist—are other unusual features."

A modern alpine hotel has been constructed.

Sun Valley is close to the town of Ketchum, founded as a mining center half a century ago, and midway between Pocatello and Boise.

BEAUTIFUL TROPICAL FOREST

The Caribbean National Forest has many attractions to offer visitors to Puerto Rico. Its virgin tropical jungle is different from any other in the world. Nowhere else can one drive over an excellent asphalt road into the heart of a forest which has stood untouched since the days of Columbus. The intimate view of its towering hardwoods, its forests of mountain palms, its myriads of ferns, airplants and bright-flowered vines blend into a glorious panorama of scenic charm.

During the past three years the Forest Service has developed in this tropical forest several beautiful areas for recreation, equipped with swimming pools, picnic shelters and many miles of horse and foot trails. The scenic beauty of this mountainous forest cannot be adequately described. It must be seen to be appreciated.

GOING TO FLORIDA?

Winter tourists on their way to Florida this year can find much of historic and scenic interest in National Parks and Monuments without moving far from the principal routes of travel.

Starting on Route 1 from New England, they may park their cars in Manhattan and take the ferry to Bedloe Island to salute Miss Liberty, who has just celebrated her 50th Anniversary. A gift from France to America, to celebrate the freedom of both countries, the Statue of Liberty is a gigantic and impressive monument, the work of Auguste Bartholdi.

A loop in the road takes the sightseer to Morristown National Historical Park and brings him back at Trenton. More than a century and a half ago, the hills about Morristown furnished shelter to a ragged American Army. The Ford Mansion houses a fascinating collection of Washington and Revolutionary relics.

A detour from Route 1 at Philadelphia on Route 30 to the west takes the visitor to the famous Gettysburg National Military Park. A local road running south to connect Route 30 with Route 40, will bring the battlefield of Antietam into the itinerary. Back to Baltimore on Route 40, the tourist should visit Fort McHenry National Park. From near here, on the night of September 13, 1814, Francis Scott Key was inspired to compose the Nation's anthem.

The tour goes on to Washington with its many National Parks and buildings including the old Ford Theater, where Abraham Lincoln was shot, and the Lee Mansion, which first belonged to the Washington family, and which Robert E. Lee left forever after his decision to command the Confederate Army rather than to accept Lincoln's offer to lead the Union forces. The house is now a National Memorial under National Park Service supervision.

The Mount Vernon Memorial Highway makes a trip to George Washington's home on the Potomac River fifteen miles from Washington, a motoring delight.

From Washington, Route 1 leads to the National Military Parks of Fredericksburg, Richmond, and Petersburg, Virginia. A side trip from Route 1 at Raleigh, North Carolina, west on U. S. 70, will take the traveler to Guilford Courthouse National Military Park, scene of the great battle of the Revolution fought in 1781. Then by U. S. 29 and local roads, it is not a long trip to Kings Mountain National Military Park, South Carolina, and Cowpens Battlefield Site, also scenes

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of Revolutionary fighting. The return to Route 1 is made on U. S. 25 from Greenville, South Carolina, to Augusta, Georgia, and then on to Florida's east coast and the ancient Fort Marion and Fort Matanzas, near old St. Augustine.

Fort Marion, also known as Castle San Marco, and Fort Matanzas were built by the Spanish when all the great countries of Europe were fighting for strongholds in the New World.

A different trip might be made from Fredericksburg, Virginia, to Jacksonville, Florida, on Route 17, taking the traveler near George Washington's Birthplace National Monument; through the Colonial National Historical Park including Jamestown, first permanent English settlement, Williamsburg, early capital of Virginia, and Yorktown; next, by

a two or three hour side trip on state road 344, to Kill Devil Hill, in North Carolina's sea and sand dune country, where a National Monument commemo- rates the Wright Brothers' successful conquest of the air; then to Moores Creek National Military Park, North Carolina, Castle Pinckney National Monument, South Carolina, and Fort Pulaski, Georgia.

The last named fort is located on Cockspur Island just outside of Savannah harbor, a site made brilliant by subtropical trees and plants and gay with the songs of more than one hundred varieties of birds.

If motorists wish to attempt to drive through the Shenandoah and the Great Smokies National Parks in winter time, they may do so by taking Route 211 and then 11 from Washington to Chattanooga, where they will find the Chickamauga and Chattanooga National Military Park, with its history of Civil War fighting and magnificent views from Lookout Mountain.

From this point on, the route to be followed to the west coast of Florida is U. S. 41.

BOULDER DAM PLAYGROUND

Visitors will be able to see the natural and man-made wonders of the new Boulder Dam Recreational Area on foot, horseback, by boat, automobile and airplane, and may spend either a few hours or a number of weeks resting comfortably or participating enthusiastically in varied recreational activities in the area, if the National Park Service's long-range development program is carried out.

There may be dude ranches, floating swimming barges, sandy bathing beaches, desert gardens, tennis courts, swimming pools, amphibian planes taking off and landing on Lake Mead, boat trips into the lower reaches of the Grand Canyon, visits to the Valley of Fire, foot trails to walk, bridle paths to ride, game fishing, observation lookouts, pic-

nic grounds, museums housing prehistoric relics, but they will not be allowed to detract from the natural beauty and character of the area, large parts of which have been seen by few men.

The National Park Service is planning the recreational features of the area under an inter-bureau agreement with the Reclamation Service, which holds title to the Boulder Dam Reservation, and has supervision over the dam and Boulder City. The Service has drafted plans for this entirely new type of project and is keeping in mind the fact that the area is not being considered as a National Park but as an intensive development for the use of extensive recreational and educational facilities around a monumental reclamation reservoir in an area of great scientific and scenic interest.

No definite boundaries for the recreational reserve have been recommended, but its program report covers an area of approximately 7,500 square miles in the form of a rough rectangle 100 miles long near Las Vegas, Nevada, on the west, to Grand Canyon National Monument on the east, and seventy-five miles wide through the middle.

It lies in the path of a great share of transcontinental railroad and motor traffic and is very close to many of the southwestern National Parks, Monuments, and National Forests. Travel to the dam has been steadily increasing and reached 1,000 a day even before the President threw the switch on September 11 that started generation of power.

The recreational plan depends largely upon the accessibility of the area and much road building will be necessary. Major roads are planned to form a loop around the reserve, with minor roads or spurs leading to observation points, over-night cabins, and special areas of interest. At present Boulder Dam and Boulder City are both reached by good roads which can be entered either from Las Vegas or Kingman, Arizona. No other points on the lake have adequate roads.

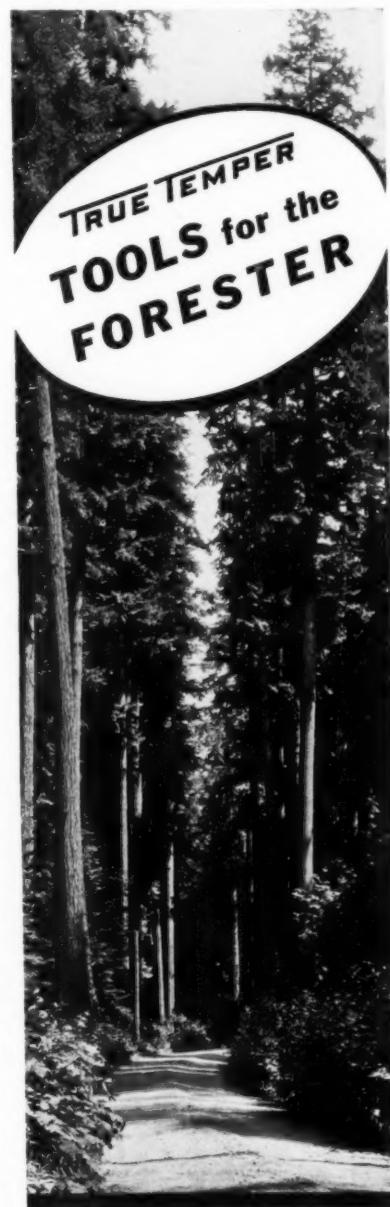
Unreasonable scars resulting from road construction and the development of recreational areas, especially those seen from the lake, are to be prevented and all others minimized as much as possible.

The lake and reservoir, formed by Boulder Dam, winds for 115 navigable miles from near Boulder City to the Grand Canyon of the Colorado and extends an arm thirty miles north up the Virgin River forming a triangular development area. The three major recreational areas will be located on the points of this triangle, one at Boulder City, one at St. Thomas toward the northern tip of the Virgin River arm of the lake, and one at Pierce's Ferry in the southeast, the first logical crossing place on the lake below Grand Canyon.



PRIZE CHRISTMAS TREE

Awarded first prize in the Alma Margaret Higgins contest for the most beautiful living community Christmas Tree in 1935, this glorified Araucaria stands in White Park, Riverside, California. It was submitted by Mrs. Harold Norman Dunbar, of Riverside.



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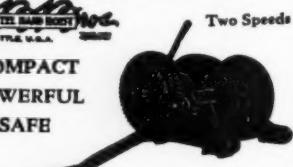
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SCIENCE AND EQUIPMENT

PLANTING PLOW

Two forestry tools have recently been developed by S. O. Heiberg, associate professor of Silviculture, New York State College of Forestry. One is a forestry plow especially designed for making parallel strips regularly spaced at the desired planting distance. The sod is removed by the plow to a width of twenty inches and placed in turned-over position on each side of the cleared strip. In the same operation the plow mixes the soil in the strip to a depth of eight or nine inches. When necessary a subsoiler may break the subsoil to a depth of twelve inches. While still under experimentation, this plow has worked very successfully to date.

TREE MARKER

The other tool is a tree marker which has already been adopted by many foresters. It is especially adapted for marking trees in connection with thinnings, improvement cuttings, timber cruising, girdlings, marking of cutting areas, trails, survey lines, establishment of permanent corners, temporary and permanent sample plots. Foresters will find this tool exceedingly light, inasmuch as the major part is made of aluminum and the blade can be inverted so that it will never cut the pocket.

NEW HAZE METER

A new haze meter to be used by fire lookouts to determine the distance they should be able to see a standard size of smoke under any existing atmospheric conditions, has been devised by George M. Byram of the Pacific Northwest Forest Experiment Station. The invention is based on the discovery that a smoke column is just visible to lookouts with good eyesight against a background approximately sixty per cent as bright as the sky at the horizon.

YARD EXCAVATOR

The Bucyrus-Erie Company are the manufacturers of a new $\frac{3}{8}$ yard excavator known as the 10-B.

This fast-moving, full-revolving machine is completely convertible with seven types of front end available. It can be changed easily and quickly from shovel to dragline, clamshell, lifting crane, dragshovel, skimmer, or backfiller with normal high speed operation maintained.

The narrow overall width and short tail swing of the 10-B permit high output performance in tight quarters among thick growth heavy timber, close to a wall or bank, and building roads to logging camps where operating room is at a premium. It travels

at a speed of four and one-half miles an hour, climbs grades to thirty per cent, and is tractor-like in maneuverability.

Distinctive in appearance, compact in design, and of rugged strength, the 10-B excavator and crane will be watched with interest by the logging and lumber industry.

IMPROVED SHEATH KNIFE

Every outdoorsman finds many uses for a sheath knife. The Cutlery Division of the Remington Arms Company has developed a new line of knives of real interest to them. The sheath knife particularly recommended is No. RH 32. The overall length is eight and one-half inches, the blade being four and one-half inches long. The handle is of leather, colored fibre and nickel-silver discs. The knife itself has a nickel-silver thumb guard. The sheath is of oak tanned leather with snap fastener loop with slits large enough to fit any standard belt.

PORTRABLE SAW UNIT

The Cleveland Tractor Company has announced a self-propelled mobile power saw unit which makes practical the use of power in felling and bucking trees. A unit that will operate three saws and can be kept in close proximity to the saw, regardless of the terrain; a unit which requires cable only long enough to keep the tractor unit out of danger when a tree falls in the wrong spot; a unit which will speed up the cutting and bucking operations, lower the cost and take the backache out of the lumber jack.

FIRE CONTROL MAPS

In the California Department of Natural Resources, Division of Forestry, administration maps are being prepared in connection with fire control work. The maps will indicate lookouts, range visibility, location of suppression crews and other valuable information. These maps will give at a glance an illuminating picture of the available facilities for fire suppression in the locality where fires are occurring, and will aid materially in fire suppression campaigns.

The "Master Fire Plan" for the Division of Forestry shows the weaker elements of previous organization, indicates the location and type of equipment needed to most advantageously strengthen the state organization. Seventy mountain peaks have been chosen as justified lookout stations in the detection planning system. Fifty-nine of these lookouts are fully equipped and ready to serve. The remaining eleven lookouts are in process of construction or held up due to legal transfer.

THE FUTURE OF FORESTRY IN SWEDEN

By NABOTH HEDIN

Forestry is Sweden's principal industry and over one-half of its exports are forestry products. They range from sawn lumber to cellulose for artificial silk. The future of this industry is, therefore, of paramount interest to the country. Can it be expanded and, if so, in what direction?

A few years ago there was doubt as to whether the raw materials would last at the current rate of exploitation and a nation-wide tree census was undertaken to determine what resources the country had and whether the rate of consumption exceeded the regrowth. The net result was that, thanks to systematic replanting and thinning, the annual regrowth was greater than the cutting. The future was safe.

But is any expansion possible? As part of the efforts to cure unemployment in the spring of 1933, a special legislative and expert committee was appointed to investigate the possibilities. This committee has now made its report. Its net conclusion is that consolidations of gains already made, rather than expansion, must be the order of the day; that improvements in quality and refinements in the products are the lines to follow.

Only in the extreme north of Sweden is there now any surplus in raw materials available and the question is whether to transport this spruce lumber further south to already existing pulp mills, or whether to build new ones. On this point the committee was not unanimous. In other parts of the country the supply of raw materials corresponds roughly to the present industrial consumption. It should be added that Sweden now enjoys a building boom and more building permits are reported as granted in Stockholm than at any time in the past ten years. This naturally increases the domestic demand for lumber.

If forestry in Sweden is to grow, it must follow the same lines as heretofore, the committee finds, that is, further refinement of the goods sold. Thus Sweden now produces more pulp and less rough cut timber than it did, and in the future this expansion can very well be continued. It is possible to make more paper in Sweden and ship less pulp. There are also various by-products that conceivably can be utilized better than at present. Already chemistry has shown how to make sugar out of wood and yeast out of pulp liquor. Experiments with charcoal burning tractors and trucks are making progress in Sweden, and if the foreign supply of gasoline and kerosene should dwindle and prices go up, domestic charcoal gas may save the day. Wood alcohol also has future possibilities. Finally the rayon industry offers new horizons, and it is conceivable that the textile industry,

which now imports all its cotton, may be linked to the yield of the forests.

But what of the employment possibilities? Here the commission is not optimistic either, except for a highly qualified personnel. The plain lumberjack has not much to hope for in the way of new jobs in the forest. Rather, thanks to various new mechanical devices and more scientific processes, fewer manual jobs are likely to be available in the future. The call is for the scientist, the specially trained technician.

As examples of this progress in what the Swedes call "rationalization," or mechanization of industry, a few concrete instances may be quoted from a recent address by J. S. Edström, head of the Swedish General Electric Company.

In the ten years between 1924 and 1934, the production cost of certain factory goods was lowered from fifty-four to eighty-six per cent, although the hour wages of the workers had increased. But how about the number of hours of work available to labor? At a certain Swedish textile mill the introduction of new and better machinery caused an increase in production of from seventeen to fifty-seven per cent in the different departments,—without any increase in workers employed.

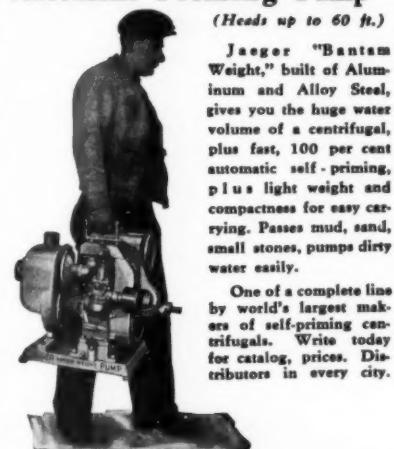
The "rationalization" process has been particularly effective in the pulp and paper industry, he said. At a certain sulphite mill fifty-four tons of pulp were produced in 1920 per worker, but in 1934 the output was 124 tons. At a new and therefore thoroughly modern plant as much as 200 tons per year per man is expected. From larger units even higher production figures are believed possible. A Swedish paper mill, which in 1924 produced sixty tons of paper per worker, made 124 tons, or more than double, in 1934. At the same time the production costs, regardless of wages, had gone down by sixty per cent.

It is likewise evident that since in Sweden the supply of raw materials cannot be greatly increased, the hope of the future lies in technical progress, further refinement in the product and new industries based on forestry by-products. A similar line of development has been followed in the Swedish metal industries. Sweden now imports the cheaper grades of steel for building purposes, as well as cast iron, while it sells more tool steel, ball-bearings, surgical instruments, pocket knives, electric motors and telephones. Some forms of Swedish steel are so highly refined that they are worth more than their own weight in gold. Sweden depends on foreign trade and in regard to its forestry products its inventors and scientists have probably not said their last word.



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GUSTAV OBERLAENDER DIES

Gustav Oberlaender, philanthropist and founder of the Oberlaender Trust, which among other benefactions has been awarding forestry fellowships for study in Germany, died suddenly at his home in Reading, Pennsylvania, on November 30. Mr. Oberlaender succumbed to a heart attack. He was seventy years of age.

Born in Duren, Germany, Mr. Oberlaender early lost both his father and mother and came to America as an orphan boy. Arriving in New York he obtained work at \$7.00 a week in a book store, educating himself at night school. From this start he accumulated during his life a fortune in the hosiery business and in his later years became active as a philanthropist.

A few years ago he established the Oberlaender Trust, administered by the Carl Schurz Memorial Foundation, with headquarters in Philadelphia. The purpose of the Trust was to promote more understanding relationships between the people of the United States and those of the German-speaking countries by making it possible for Americans to study in the German-speaking countries.

Under the auspices of the Oberlaender Trust, groups of Americans, during the past three years, have made extensive studies of forest conditions and practices in Germany, Hungary, Austria and Czechoslovakia.

FLOODWAYS SURVEY STARTS

Progress in the appraisal of more than 1,200,000 acres of land in the proposed floodways in the alluvial basin of the lower Mississippi River, preliminary to the War Department's flood control project under the Overton Act, is reported by the Department of Agriculture, which is carrying on this phase of the work for the Army Engineers.

George R. Boyd, chairman of the Department of Agriculture committee on appraisal of these lands, after a recent inspection trip by the committee, reported field work completed on about twenty-five per cent of the total area in the four floodways, which parallel the river from Arkansas through Louisiana to the Gulf.

Because of the variety of lands to be appraised, says Mr. Boyd, the committee, to insure fair valuations for all owners, has obtained expert assistance from several bureaus of the Department. Among these at work are soil specialists, agricultural engineers, economists and foresters.

The factors kept uppermost in the minds of the appraisers are: The soil itself, the size, kind and number of trees, buildings and other improvements, crops grown, location as to market roads and other transportation facilities, drainage, weediness, and such special values as, for example, income from muskrat pelts on marsh lands. The value placed on each tract is a result of the combined judgment of two appraisers checked by the central office at Vicksburg.

Much of these areas is made up of forest, swamp and marsh land, but there are considerable areas of farm land and potential farm land. The Eudora area, in Arkansas, with a total of 822,000 acres, is the largest of the group; the West Atchafalaya, in Louisiana, has 160,000 acres; Berwick Bay, also in Louisiana, 100,000; Morganza, Louisiana, 79,000; and

the Wapappelo reservoir area, in Missouri, 60,000 acres.

The committee expects completion of all the field work in the spring.

DEATH CLAIMS WILL C. BARNES

Will C. Barnes, cattleman, author, soldier and public official, who devoted twenty-one years of a colorful life to the development of range management in the National Forests, died suddenly at Phoenix, Arizona, on December 18. He was seventy-eight years old.

Entering the Forest Service as an inspector of grazing in 1907, he was a leading figure in the grazing management



Will C. Barnes

work of the Service from its inception. In 1915 he became chief of the Branch of Grazing Management, retiring in 1928 as assistant forester in charge of Range Management.

A native of San Francisco, Mr. Barnes at an early age became identified with the pioneer life of Arizona. During the Apache Indian War he served in the United States Army, being awarded the Congressional Medal of Honor for outstanding valor in line of duty.

As an author, Mr. Barnes was widely known both for his books and magazine articles and stories.

NEW YORK HONORS THREE

Three men who have won wide recognition in the realms of forestry and conservation received honorary degrees at a commemorative convocation of the New York State College of Forestry on November 20, feature event of the celebration marking the twenty-fifth anniversary of the college.

The three were Robert Moses, head of the New York State Council of Parks; Arno B. Cammerer, director of the National Park Service, and Robert B. Goodman, president of the Northern Hemlock and Hardwood Association.

Each received the honorary degree Doctor of Laws.

SECOND WILDLIFE CONFERENCE

Sponsored by the American Wildlife Institute, the second annual North American Wildlife Conference will be held in St. Louis, March 1, 2, 3 and 4. At this same time will be held the second meeting of the General Wildlife Federation. Former Senator Frederic C. Walcott, president of the Institute, will preside as general chairman.

There will be three concurrent sessions on all but the third day of this conference. There will be a general session at which the majority of those in attendance will gather, and at the same time two smaller sessions will attract research workers and wildlife technicians to discussions of studies and management of land and water areas for wildlife.

The first day of the general session will be devoted to a review of the progress of state and federal programs of the year, while the second day's session will consider their plans for the future. The fourth day will be devoted to a conference with Dr. Ira N. Gabrielson, chief of the Biological Survey, and other officials, to discuss a joint program of wildlife restoration between federal and state agencies.

The third day will be devoted wholly to the affairs of the General Wildlife Federation. Much of vital interest to the future of wildlife restoration activities will occur at this session. It is expected that the Federation, set up in temporary form last year, will be made permanent.

ASHE NURSERY DEDICATED

Thirty million seedling pine trees are ready to ship this winter from the new Ashe National Forest Nursery for planting on cutover lands in the South, according to the United States Forest Service. The Ashe Nursery, one of the largest in the South, was dedicated in the De Soto National Forest, near Brooklyn, Mississippi, in November. E. E. Carter, chief of the Division of Timber Management of the Forest Service, represented Chief Forester Silcox at the dedication.

At the dedication, a memorial tablet was unveiled in honor of the late William Willard Ashe, who was a senior forest inspector of the Forest Service and a scientist of recognized attainments. Descendant from the family for which Asheville, North Carolina, was named, Mr. Ashe graduated from the University of North Carolina and from Cornell. He joined the State Forestry Department in his native state, and, in 1905, entered the Forest Service. He made the first commercial plantings of longleaf pine and pioneered many improved methods in lumbering and turpentining now in use. Mr. Ashe also ranked as a leading authority on forest types of the southeastern states. As a botanist he described more than one hundred new species, chiefly hawthorns, hickories, and basswoods. Throughout his thirty years of work in forestry he emphasized the need of scientific research for the advancement of forestry and the conservation of natural resources.

Most of this year's crop of 30,000,000 seedlings at the Ashe Nursery will be planted on National Forest lands, of which the government has already acquired a million acres in Mississippi.

O AND C TIMBER SALES

Timber sales on the revested Oregon and California Railroad grant lands in western Oregon returned the Federal Government the sum of \$247,789 during the fiscal year ending June 30, 1936, according to Commissioner Fred W. Johnson of the General Land Office. The sixty-nine timber sales involved the transfer to private ownership of 158,665,000 board feet of timber on 4,528 acres of land. In accordance with the Act of July 13, 1926, the Federal Government will pay this money to Oregon counties in lieu of the taxes which would have been received had the lands remained in the ownership of the Oregon and California Railroad Company.

Since the enactment of the law, the 1,040 timber sales, involving some 125,000 acres, and nearly three billion board feet of timber, have returned the government \$6,870,999.

As indicated in "The Oregon Checkmate," published in AMERICAN FORESTS, April, 1936, the federal payments to the counties now exceed the receipts by nearly \$10,000,000, and under the present law "the government will continue to go deeper and deeper in the red and will have nothing to show for it except devastated land."

NEW HAMPSHIRE ACQUIRES DIXVILLE

Dixville Notch, in northern New Hampshire, will become the property of the State, according to an announcement by W. R. Brown of the Brown Company of Berlin. The Brown Company, as grantors of the land, will deed a strip of about 140 acres to the State. This extends on both sides of the state highway for about a mile from the height of land adjoining the Balsams Hotel property to the base of the Notch.

Under the terms of the deed, which will transfer to the State the last of New Hampshire's outstanding rugged notches, the natural beauty will be preserved and the area will be kept free of commercial enterprises. It will be administered by the Forestry and Recreation Department of the State of New Hampshire.

WILDLIFE EXTENSION

The Extension Service of the Department of Agriculture is cooperating with the Biological Survey in offering more direct assistance to farmers and others in the field of wildlife management and restoration. I. T. Bode, formerly conservationist with the Survey, has been appointed the first wildlife specialist under the Extension Service.

Texas and Iowa are the only states so far that have state extension specialists devoting full time to wildlife work. In many states, however, specialists in related fields have already devoted considerable time assisting county agricultural agents, club leaders, farmers, and others in carrying on activities in connection with some aspects of the Biological Survey's work. Some ideas already developed are being applied on many farms.

For example, there have been 4-H rabbit clubs for some time in many states, and rabbit production has provided a supplementary meat supply and income from fur on many farms. Considerable activity along the lines of rodent and predatory-animal control also have had important economic bearing on farm operations. Wild birds have long been appreciated for their value in insect pest control and from the esthetic point of view. Probably of most

recent importance is the request from farmers for assistance in plans for managing game birds and animals as a farm crop.

"Indicative of the importance of wildlife to farm income," says the Survey, "is the \$60,000,000 derived annually from fur-bearers in this country, and the fact that a large percentage of this return goes back to the lands on which the animals were trapped or raised. Of the total income, fifteen per cent is produced on the fur farms."

Mr. Bode has been actively engaged in the organization of the cooperative wildlife research, demonstration, and educational projects under supervision of the Division of Wildlife Research of the Biological Survey at nine land-grant colleges. He holds B. S. and M. A. degrees from Iowa State College, and was Extension Forester in Iowa from 1921 to 1932. Before becoming conservationist for the Survey a year and a half ago, Mr. Bode was chief executive of the Iowa Fish and Game Commission.

AGRICULTURISTS TO DISCUSS FORESTRY

The next annual meeting of the Association of Southern Agricultural Workers will be held at Nashville, Tennessee, February 3, 4, and 5. The officers of the Forestry Section of this organization are: R. W. Graeber, extension forester, North Carolina, chairman; J. S. Holmes, state forester, North Carolina, vice-chairman; G. H. Lentz, forestry division, Tennessee Valley Authority, secretary.

A program to show the value and importance of forestry as an integral part of agriculture in the South is being arranged. F. A. Silcox, chief, United States Forest Service, has been asked to head this program.

An invitation has been given the Appalachian, Gulf States, Ozark and Southeastern Sections of the Society of American Foresters to hold a special joint meeting at this time.

AWARDS FOR FLORIDA SCOUTS

Boy Scouts of Florida who complete forestry activities sufficient to warrant a Certificate of Merit will receive the pine cone emblem from The American Forestry Association. Those who carry on approved forestry projects for three years will be awarded the pine tree emblem from the same organization. The plan, recently worked out in cooperation with the Florida Forest Service brings the Scouts directly into a program of forest protection, reforestation and improvement thinnings in existing timber stands. It is an outgrowth of a plan established several years ago in which The American Forestry Association bronze plaque was conferred upon the Scout troop whose forestry accomplishments were most outstanding in the State.

The Scouts, under direction of representatives of the Florida Forest Service, will block off woodlands into ten acre plots, surround them with fire lines eight feet wide, and organize their troops for fire fighting. The reforestation program includes the collection of pine seed followed by the preparation and care of a four by twelve foot seed bed, and the planting of one acre a year to forest trees. Where conditions permit, the troops will undertake to thin timber stands to improve the growth, and to provide material for building cabins, bridges, rustic seats, and for firewood or pulpwood. These activities are supplementary to the regular scout program.

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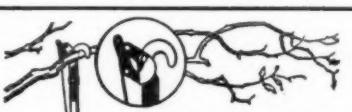
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American Conservation—Edited by Butler.....	\$ 2.50
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Conservation—Havemeyer and Van Hise.....	5.50
Our Federal Lands—Yard.....	3.00
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NEW BOOKS

TREES, by Thomas O. Sheckell. Published by Frederick A. Stokes Company, New York, N. Y. 82 art gravures. Price, \$4.00.

The supreme expression of beauty in nature has been captured in this unusual volume of rare photography, which presents eighty-two art gravures, many of which have been hung in leading salons of photographic art throughout the world and have brought Mr. Sheckell a reputation as a poet and artist with the camera. (Readers of American Forests will recall Mr. Sheckell's "In the Path of the Storm" which was awarded first prize in the competition conducted in 1933 by The American Forestry Association for beautiful photographs of trees—as well as many other subjects which he has been good enough to contribute to its pages.)

Each picture in "Trees" is a delight in itself, as an achievement in composition in black and white, in plane surfaces, in depth and design—and each conveys with striking vividness some new aspect of the human significance of trees.

Those interested in photography will find here a challenge and a delight; those interested in trees will cherish it.—E. K.

THROUGH THE WOODS, by H. E. Bates, with 73 engravings on wood by Agnes Miller Parker. The Macmillan Company, New York. 141 pages. \$3.00.

This is an English book—written by an Englishman of renown in literary fields—about an English wood, but it is written for all true lovers of the woodland. Such woodlanders love not only the wood but all the life with which it is filled—and at all the seasons. And here it is pictured for them in perfect cycle, from April back again to April—a word picture, painted by a master who knows and loves the English countryside. His colors are the vibrations of the seasons—Spring's delicate green promises and fragile pastel tints; Summer's glory in shades of rich fulfillment and Autumn's brilliant harvest fruitage, blended in perfection by the softening that only Winter's tones can bring—when the wood is deep in nature's sleep, under "the absolute silence of snow."

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The author's text is illustrated by wood engravings of rare beauty and feeling, done by Agnes Miller Parker, one of England's outstanding artists. Reading "Through the Woods" will indeed be found a gladsome journey.—L. M. C.

MICHIGAN WATERFOWL MANAGEMENT, by M. D. Pirnie. Published by the Game Division, Michigan Department of Conservation, Lansing, Michigan. 328 pages; illustrated. Price, \$1.50.

To the student or layman interested in efficient handling of present and future waterfowl problems, this book is particularly valuable. It covers not only the complicated biology and economics which are involved in the efficient conservation of wildlife, but deals at length with recreation problems.—E. K.

THE REPTILES OF NORTH AMERICA, by Raymond L. Ditmars. Published by Doubleday, Doran and Company, Inc., New York, N. Y. 465 pages; 135 pages illustrations. Price, \$6.75.

Twenty-nine years ago, under the title of "The Reptile Book," the first edition of this book appeared. Soon thereafter it became recognized as a national standard for the study and identification of the reptiles of North America.

In revising it, Dr. Ditmars faced a formidable task. The slow but steady development of technical nomenclature has produced changes among most of the scientific names, and trinomial designation has been applied to many. Twenty-eight new species of snakes have been discovered since the publication of the first edition, also forty-seven lizards and ten turtles. Many new sub-species have been named. All are included in this new volume.

The bulk of the descriptions have been rewritten by Dr. Ditmars to facilitate identification and new keys prepared for the greater number of genera. That part of the work relating to snakes has been expanded. The latest methods in the treatment of snake bite are given in detail.

All told, this completely new and revised edition, including up-to-date additions to species and new classifications of turtles, tortoises, crocodilians, lizards and snakes sets a new standard for the study and identification of the reptiles of North America.—E. K.

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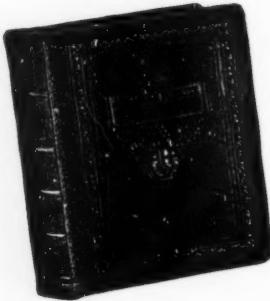
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Federal Agencies Report on Conservation

At the time of going to press a number of government departments and bureaus had submitted annual reports to the President. Those dealing with conservation are briefly summarized as follows:

AGRICULTURE

The removal of submarginal land from cultivation, its reclamation for forestry, wildlife, water conservation, recreation, and public responsibility for forest management on a sustained-yield basis are emphasized by Secretary Henry A. Wallace in his annual report of the Department of Agriculture.

Mistaken land use practices have caused the ruin by erosion of 50,000,000 acres in the United States, he stated, and seriously damaged an additional 50,000,000 acres. In partial correction of this condition, the Department, through its various bureaus, has established 139 demonstration projects, each of 25,000 acres in forty-one states; has added 3,000,000 acres to the National Forests for a total of 170,000,000 acres; is acquiring 45,000 acres for big-game refuges; and has under jurisdiction 3,000,000 acres of bird refuge land.

In support of the principle that sustained-yield in forest management is a public obligation, Secretary Wallace defended the expenditure of more than \$58,000,000 by the C.C.C. for the protection of privately owned forest lands from fire.

INTERIOR

Featuring the wise development of water resources, the prudent use of land and its product, and the orderly but unwasteful exploitation of mineral deposits as major objectives of the Department of the Interior, Secretary Harold L. Ickes in his annual report again recommended that the name of his department be changed to "Department of Conservation."

Such a designation, he said, would give conservation an authority heretofore lacking and would promote an increased consciousness of conservation as a government policy.

"The only major land-administrative activity that is not now within the jurisdiction of the Interior Department is concerned with the lands within National Forest boundaries. According to the Forest Service more than half the area within these boundaries is not available as a source of merchantable timber and is considered to be chiefly valuable for grazing and the maintenance of useful forage cover. The administration and use of such lands should be coordinated or combined with those of the far greater area of lands of similar general character in grazing districts under the jurisdiction of the Department of the Interior."

FOREST SERVICE

The permanent and future progress of the United States can be promoted by proper evaluation and common sense management of land to obtain the largest net total of public benefits, the Forest Service stated in its annual report.

"Whether or not the prodigal and wasteful use of our soils and their products was justified during pioneer developments, a continuation of such practices now definitely menaces national permanency and progress. Proper distribution of economic and social benefits requires that an appropriate balance be sought between farm, pasture, forest, range, recreational, wildlife, watershed and other land uses in the light of

soundly coordinated national requirements for products and services."

An adequate system of National Forests must be developed, the report said, on the basis of a sound appraisal of public requirements as well as in proper adjustment with the plans and programs of other federal agencies, the states, counties, towns, and private landowners.

The net area of the National Forests on June 30, 1936, was reported at 165,978,691 acres, an increase during the year of 2,668,689 acres. An additional 3,123,832 acres acquired under the Weeks Law were within purchase units that had not yet been given a National Forest status.

NATIONAL PARKS

Nearly 8,000,000 people visited the twenty-six National Parks, sixty-seven National Monuments, eleven National Cemeteries, eleven Military Parks, ten Battlefield Parks and two Historic Parks under the jurisdiction of the National Park Service in 1936, according to the annual report of Director Arno B. Cammerer.

Two new National Parks were formally established during the year—the Shenandoah, in Virginia, and the Mammoth Cave, in Kentucky.

A nation-wide study of public parks, parkways and recreational programs on all lands other than those under the jurisdiction of the Department of Agriculture was formulated during the year.

BIOLOGICAL SURVEY

Success of rebuilding wildlife depends on close cooperation of landowners and conservation agencies, Dr. Ira N. Gabrielson, chief of the Biological Survey, stated.

Practical plans that will provide for wildlife needs without interfering with other desirable objectives are being furnished by the Survey to federal, state and local agencies that administer land. The Survey also put in operation in 1936 nine cooperative wildlife research demonstration units at land-grant colleges.

The report shows that the basic problem of migratory waterfowl restoration as well as of other wildlife conservation is closely associated with programs of land utilization. Since few natural waterfowl habitats of large size are left, the Survey has undertaken the restoration of areas formerly used but ruined for waterfowl by unsuccessful drainage or otherwise. During the year the Survey established fifty-five new waterfowl refuges.

THE C.C.C.

Recommendation that the Civilian Conservation Corps be made a permanent part of the national government and, except for enrollees, under classified civil service, was made in the report of Robert Fechner, director of Emergency Conservation Work.

"As long as there are young men, eager to work, yet idle through no fault of their own, the C.C.C. can continue to be an effective part of our national policy," he said.

Based on this conclusion, Mr. Fechner recommended "that this program of conservation work, among men and natural resources, be adopted as a permanent part of our national governmental activities, the size and extent of the work to be governed by the dual factors of employment conditions and the urgency of the conservation work to be accomplished." He then urged and recommended "that all positions therein, save enrollees and intermittent workers, should be placed under the classified civil service."

FORESTRY IN CONGRESS

By G. H. COLLINGWOOD

With the opening of the 75th Congress on January 5, few new personalities will appear on the committees and subcommittees handling forestry and conservation legislation, but many bills and issues left unfinished in previous Congresses will be brought to the forefront. Government reorganization with potent possibilities for forestry and land use may receive early attention, while possible attempts to reestablish the defunct N.R.A. would revive public interest in federal control of the forest industry.

Hearings on the several appropriation bills covering conservation subjects for the coming year are not expected to begin until after Congress convenes. The recommendations of the Bureau of the Budget, which will be made public with President Roosevelt's budget address to Congress in January, will indicate the directions of prospective retrenchments.

State Foresters have already gone on record in an effort to secure \$2,500,000 for cooperative forest protection under the Clarke-McNary Act, and \$5,000,000 for land acquisition under the Fulmer Act. The National Forest Reservation Commission at its meeting on September 30 passed a resolution in support of \$10,000,000 for land acquisition, and the National Conference on Dutch Elm Disease is urging an appropriation of \$3,000,000 for continuing the campaign to eradicate the Dutch elm disease.

Early in the coming session, a bill for continuing the Civilian Conservation Corps is expected. This is now a separate unit with legal authorization until March 31, 1937. It is understood the President has included sums for its maintenance in his budget for the fiscal year beginning July 1, 1937. Whether the C.C.C. will be continued as a relief agency in its present independent status, as an organization for training young men under the Army, or purely as a work agency under the Department of Agriculture, the Department of the Interior, or the Department of Labor is a matter of conjecture. It is imperative, however, if the organization is to be continued, that some legislation be formulated and passed by March 31, 1937.

Government reorganization, with particular reference to the grouping of conservation agencies, remains uppermost in many minds. The committee appointed during the past year by the President is expected to report before the end of December, and may be influenced by the renewed recommendation by Secretary Ickes in the annual report of the Department of the Interior, that this department be renamed "Department of Conservation." It is reported that with the resignation of Under Secretary Tugwell, the Resettlement Administration will be distributed into four or more bureaus of the Department of Agriculture before Congress convenes.

Financial credit to forest owners who place their lands under sustained yield, as proposed in the Fletcher-Caldwell bill of the last Congress, will no doubt be

reintroduced and pushed during the coming session. While generally favored by the industry and bearing the unofficial approval of the Forest Service and Farm Credit Administration, the Secretary of Agriculture issued no report on the bill.

No clear course has been designated for the McNary-Doxey bill which developed out of the proposed "omnibus" forestry bill. Public action regarding this bill, or parts of it, may be formulated at a meeting of the Conference of Lumber and Timber Products Industries with public, federal, and state agencies which may be held in Chicago early in March. Portions of the McNary-Doxey bill relating to cooperative features of the Clarke-McNary Act, together with the section authorizing a wider field of forestry extension to serve large timberland owners, have been assembled by the State Foresters in the expectation that it will be introduced as a separate bill early in the session. The progress of the Foresters' bill will depend upon the pressure of the Department of Agriculture toward passage of the Norris-Jones Farm Forestry bill, which passed the Senate last year. This bill would stimulate extension work with all timberland owners without requiring financial cooperation on the part of the states.

No plans have been announced concerning the Great Plains shelterbelt project. The Forest Service has cooperated with farmers in planting over 30,000 acres to suitable trees and shrubs, but the last Congress attempted to conclude the work, appropriating \$170,000 to dispose of the trees remaining in the nurseries.

New legislation relative to the more effective administration of the O and C Lands in Oregon has been drafted by the Department of the Interior as a result of the conference in Portland, Oregon, on July 27. The new bill, like H. R. 12874, of the last session of Congress is not expected to go beyond requirements for the practice of sustained yield management on these lands.

The bill proposing to create the Mount Olympus National Park will undoubtedly be reintroduced by Representative Wallgren, of Washington, who made this an issue in his recent campaign for reelection.

Similarly, the proposed extension to the Grand Teton National Park will probably be again formulated in a bill.

The effort to drive a tunnel through the Rocky Mountain National Park in Colorado, to divert water from the Colorado River into the Platt River east of the Rocky Mountains, for the irrigation of sugar beet lands may be renewed by Representative Cummings of Colorado. That project, which threatens National Park standards, was known as the Grand Lake-Big Thompson Transmountain Diversion Project. It carefully avoided any reference to the National Park through which the water would be carried.

Efforts are also being formulated to amend or nullify the Act of June 22, 1936, permitting prospecting and mining in the Glacier Bay National Monument.

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ASK THE FORESTER

Forestry Questions Submitted to The American Forestry Association, 919 - 17th St., N. W., Washington, D. C., will be Answered in this Column. . . . A Self-Addressed Stamped Envelope Should Accompany Your Letter.

QUESTION: Is the California myrtle the same as that which grows in the Holy Land? —P. L. B., New York.

ANSWER: The two species belong to entirely different families. The California myrtle, *Umbellularia californica*, belongs to the Lauraceae family and is a tree native to a restricted region in southwestern Oregon and northern California. The myrtle of the Mediterranean region, *Myrtus communis*, is a small evergreen shrub only two to ten feet high which bears small aromatic leaves and white flowers followed by blackish berries.

QUESTION: What species of oaks other than *Quercus suber* are suitable for the production of cork of commercial value? Can cork oak be successfully raised in the southeastern states? —J. F. K., Louisiana.

ANSWER: Commercial cork is obtained from *Quercus suber*, *Quercus pseudosuber*, and *Quercus occidentalis*. Of these *Quercus suber* is the most important.

The Bureau of Plant Industry of the Department of Agriculture reports that several old trees of *Quercus suber* are growing satisfactorily in various places in the southeastern states, but no recent effort has been made to grow the tree on a commercial basis. They report that the cork produced on trees growing in rainy regions is thin and filled with red streaks, making it of little value except for ground cork. Efforts at commercial production are discouraged outside of limited areas in southern California and Arizona, where the results have not been particularly encouraging. A cork oak plantation near Chico, California, now about thirty years old, has produced trees of such slow growth as to discourage any investment in such plantations.

QUESTION: Is it true that suckers of chestnut trees that have the chestnut blight are immune to the blight? —D. B., Oklahoma.

ANSWER: According to the Office of Forest Pathology in the Department of Agriculture's Bureau of Plant Industry, there is no reason to believe that sprouts from diseased American chestnuts are resistant to the blight. While experiments are being conducted, nothing has been determined which would warrant the extensive planting of American chestnut seeds, suckers, or shoots. None of them have thus far proved immune to the disease.

QUESTION: Specimen branches of white pine, Norway spruce, and red pine from a plantation in northern New York, which had been inadvertently dusted with fine talc were received recently, with the following statement: "On the side of the hill back of the mill are probably a hundred trees that get the dust which have never been attacked by the weevil. * * * We have about 132,000 red pine trees, a large percentage of which have been attacked by saw worms —the worms were eliminated by one application of talc. * * * In preliminary experiments the saw fly larvae were evidently killed by dehydration. * * * On the strength

of our experience we intend to dust all the white pine trees next March in an effort to control the weevil. What experience have others had with talc as an insecticide?" —W. H. L., New York.

ANSWER: This was referred to the Bureau of Entomology and Plant Quarantine which reported comparatively little research into the uses of talc as an insecticide. They consider it primarily as an inert material suitable for carrying insecticides such as nicotine. Applied by itself they have found talc primarily valuable as an insulator, and as a means of repelling delicate insect organisms. The experience of the New York tree planter is submitted as of interest, and possibly helpful to others who are troubled with similar insect attacks.

QUESTION: Please tell me whether manganese sulfate is used by any forest tree nursery? —E. H. C., Illinois.

ANSWER: Extensive inquiries reveal that while experiments have been made in the use of potassium permanganate, it is not now used by any nursery.

QUESTION: Is the gum produced by chipped pines the sap of the trees? —W. C. M., Florida.

ANSWER: The resin is not sap but is produced by special cells or resin ducts extending up and down within the trees which, when cut produce gum or resin. The ducts are connected laterally so as to form one system and a wound may stimulate gum producing activity several inches from the cut. As the gum hardens it gradually seals the exposed ends of the duct and virtually stops "bleeding." To renew the flow the turpentine producer makes an additional wound or new "streak" above the old one.

QUESTION: What are the distinguishing characteristics of the common catalpa (*C. bignonioides* Walter) as compared with hardy catalpa (*C. speciosa*)? —W. B., New York.

ANSWER: Hardy catalpa is the more vigorous grower, attaining heights up to 120 feet with a pyramidal crown and a reddish brown bark consisting of thick scales. In contrast, common catalpa (*C. bignonioides*) is seldom over fifty or sixty feet high, with a round-headed crown consisting of widely spreading branches. The bark is light brown and thin scaled. The leaves of common catalpa are more shortly tapered at the tip and produce a disagreeable odor when crushed. Those of hardy catalpa are practically odorless. The flowers of both species are mostly white with two yellow stripes. Those of the common catalpa are thickly spotted on the inner surface with purple brown blotches, whereas the spots of *C. speciosa* are inconspicuous and the corolla has a distinct notch on the lower lip. The walls of the seed pods of hardy catalpa are thicker than those of *Catalpa bignonioides*, and the seed wings are grayish, while those of *C. speciosa* tend to be light brown, rounded, and wide fringed.

ELFIN FORESTS

(Continued from page 11)

A marvel of the elfin forest is the way in which varying species of tree, shrub and woody vine are compacted together. Wild honey-suckle, often with a stout trunk, ascends the trees. Climbing penstemon, a shrub, works an intricate embroidery in and out among the manzanita and sumacs. Wild clematis reaches up from the ground to spread a fresh green coverlet over its drab neighbors. Chaparral pea, a forbidding thorny shrub, is companioned by wild gooseberry which outdoes the cactus in that trunk, branches, even flowers and fruit are covered with thorns and prickles.

Crowded into the mass are curiosities no end—giant yellow poppies that grow on elfin trees; lupines that become man-tall bushes; an evergreen sunflower; monkey-flower shrubs. There are sages, lovely in bloom. There are elderberries, California laurel, "wild-olive," or bay-tree of the cañon trails. There is the yucca—but this is no book, only a sketch, a teaser.

Eastern newspaper men, ever on the alert for stories embarrassing to the Golden State, are frequently rewarded with news of a brush fire, followed, a few months later, by even juicier reports of a flood. This susceptibility of the chaparral to fire and of the burned area to flood has been, since 1926, a subject for intensive investigation by the Forest Service in cooperation with the University of California.

A very significant finding has been the importance of forest litter, apart from the vegetation itself. "The removal of forest litter may increase immediate surface run-off, three to thirty times and increase erosion fifty to 6,000 times,"—and this, not because the litter absorbs much moisture of itself, but because it preserves the soil's maximum capacity for percolation.

Run-off plots have been staked out, representing in each case a certain type of forest cover or soil, adjacent to a plot burned clean. Precipitation is recorded simultaneously with run-off; and eroded debris is measured at the end of a storm. Results? "Surface run-off from base soils exceeded that from similar but brush covered soils in ratios up to sixty-six to one. Erosion increased about 400 fold." No wonder then that a rain of only one and seven hundredths inches in three hours, falling on a fire-swept 700 acres of watershed could produce the dramatic Burbank flood of 1928.

The aftermath of a foothill fire calls for emergency planting of mustard seed by hand or from airplanes, the digging of debris basins at the mouths of canons and the throwing up of small check dams in the gullies. The foresters, fighting flood by fighting fire, are experimenting with various fire-resistant shrubs and trees with a view to finding the most nearly ideal covering for the replanting of burned areas.

For grandeur, for spectacle, the chaparral cannot even enter the running against the forests of giants to the north. But in the natural scheme of things it plays its part quite as well, in many respects better. And it is not what it seems at first glance—an abomination to the eye and an irritation in the throat. It needs, as Will Gere told us, only to be looked at intimately.

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WHEN DEATH RIDES THE FOREST

(Continued from page 13)

happening on either side of us. Our eyes became sore and bloodshot. It was difficult to breathe.

"Slowly the afternoon passed, with our backfires traveling steadily windward toward the head of the driving main blaze. Suddenly there was a mighty roar and we knew that the two fires had met. A shower of windblown sparks and burning debris fell thickly about us. We labored frantically, stamping out the small tongues of flame. We shouted and sweated and worked. But we held the line.

"The smoke thinned and the heat died down. We paused to refresh ourselves with deep gulps of clearing air and tepid water. We wished our day's work were over, but we knew that up ahead, a mile or two, the torch bearers were still moving grimly forward. A truck appeared from out of the smoke and we climbed aboard—to move up again.

"We were told that the approaching fire had fanned out to a three mile front, that we must backfire still another mile before we could head it off, and that it was already dangerously close to the road from which we were to work. So after a short and hot ride we piled out, ready for action. It was a desperate job from then on. We were working against time, with only minutes left to head the fire off before it crossed the road.

"Ten minutes passed—yet half a mile to go, with the fire almost upon us. Twenty minutes and we were almost to the end—but too late. Just ahead an angry wall of flame swept high across the road, and in a moment, it seemed, the wooded hill on the other side was already afire. A little more time and we would have won. But we were battling a blaze that since its inception in mid-forenoon had already traveled over a distance of eight miles, leaving a three mile swath of blackened desolation in its wake.

"At sundown, after an hour of needed rest, we were up again to meet the vanguard of fresh re-enforcements—new truckloads of men and equipment to aid us in our night assault.

"All was order and discipline now as trained forest officers distributed both men and machinery in a twenty mile circle. Soon the big plows, drawn by powerful tractors, began their twenty mile furrow around the slumbering blaze, breaking down and uprooting all trees and brush in their path and opening a furrow of mineral soil over which tomorrow's awakened blaze must not pass.

"Far into the night we followed the plows, watering down the burning brush, throwing sand on blazing stumps and clearing the furrows of all grass, leaves, or brush.

"We bedded down after midnight under a canopy of stars, hoping for rain but hoping in vain. For we wakened again under a relentless sun. All day long we patroled that twenty mile circle of plowed furrows, beating down each spot of fire as it blazed up in the wind.

"As evening approached we rejoiced that the victory had been won. Stumps and trees and small patches of brush were still blazing, but no longer a menace. We would have to send out daily patrols for another week to beat down these interior fires one by one, and to patrol our fireline for smouldering sparks. But the emergency was over. We could now go back to our camps to patch up our bruises and burns and rest until another thoughtless person tossed away a lighted match, or left a campfire burning."

Yes, somewhere today in some city, village, or hamlet there sits a man who has recently returned from his vacation in the North Woods. Little does he dream that with the tossing away of his careless match he has converted his vacationland into a barren, blackened, desolate and lonely waste, where crystal-clear lakes no longer reflect a shoreline of verdant green, where deer and bear and other woodfolk have perished in a deathtrap of flame, where the only voice that breaks the somber stillness is the hoarse cry of the scavenger crow calling upon its mate to pick the bones of burned and blackened carcasses.

IS THE PAPER INDUSTRY MOVING SOUTH?

(Continued from page 7)

in "The Deserted Village." This is a decided advantage for the South but is well within the bounds of reason.

Absence of heartwood in pines is reported by Dr. Herty as essential to permit their use in the ground-wood or sulphite process. In the naval stores belt which includes approximately one-half the timberland of the South it is questionable whether or not good management for naval stores will permit thinning the stands at a stage where the thinnings will be in trees large enough to make pulpwood. Naval stores are the money crop. To get maximum production requires an orchard-like stand of trees with full crowns. Frequent and drastic thinning in the early stages seem to be indicated and are called for in some of the management plans. If pulpwood thinning are contemplated, they will probably be obtained at considerable sacrifice of naval stores production. After turpentining, heartwood has formed and the trees are unsuitable except for sulphite or kraft pulp. Therefore, a paper mill requiring pulpwood from trees with

out heartwood would probably be inclined to locate outside the naval stores belt or be prepared to pay a premium for its wood.

The cost of pulpwood in the South is reported to be about \$4 a cord at the mills for rough wood. In some instances such low prices do prevail but usually they represent starvation wages and often such costs as overhead, scaling and unloading at mills are not included. What would be a reliable figure upon which to base an investment of ten million dollars, which is about the cost of a fair sized paper and pulp mill? Certainly not as low as \$4 a cord. Living wages must be paid for producing pulpwood; the spirit of the times demands it. Furthermore, the owner of stumpage is now getting very low prices for his wood. In the long run, he must have a fair return to justify his effort in growing the wood. The requirement that only sapwood be used will necessitate sorting or careful selection of wood. Current prices are for wood suitable for kraft paper; pulpwood to be used in the sulphite process requires high-

er specifications as to defects. Lastly, if any considerable development of mills takes place, competition of buyers will tend to raise prices.

What will be the price of wood which could be reported to a Board of Directors as a safe figure in reaching a decision whether or not to build a \$10,000,000 pulp mill to make "white" paper?

Some foresters argue—and very convincingly—that ownership of a forest property located in close proximity to the mill, and managed intensively, will guarantee the pulpwood needed at a price of from \$4 to \$6 a cord. That may be true but a Board of Directors would not risk the company's money unless the undertaking could be justified on the basis of the competitive price of pulpwood in the open market. I am talking about a paper mill investment, not a speculative adventure in timber growing.

In conclusion, the South is now doing a good business in the manufacture of kraft paper. Indications are that further developments along this line will take place before attempts are made to make other grades of paper. There are abundant supplies of both pine and hardwood to support additional mills but not unlimited supplies; locations will have to be chosen with some degree of care. The present stand of timber is very thinly distributed but with successful fire protection and especially with intensive management, it is theoretically possible to grow large volumes of wood.

It is my belief that it will be a long time before anything like full stands are obtained over large areas. The average site is difficult to estimate but I believe the South can and will grow timber twice as fast as it can be grown in the North.

It seems probable, although not certain, that commercial methods will be found to make so-called "white" paper from Southern pine. By "white" paper is meant newsprint, and the higher grades now made from spruce by the sulphite process. The road to success will probably be found somewhat stony and progress may be slow, but eventually some degree of success seems likely. The production and sale of the higher grades of pulp, rather than paper, would be the most logical development at first since America now imports a large tonnage of bleached and unbleached pulp used by the numerous "converters." Apparently, Southern pine pulp, which could be substituted for the imported article at a cheaper price would find a ready sale; but the higher grades of paper, made from Southern pine, would find a market already supplied by mills well entrenched with excellent sales organizations and with perhaps surprising ability to meet competition on the basis of both price and quality. No one can really prophecy what might be the outcome of such regional competition. Probably some kind of a balance would be struck after the more favorable locations in the South have been occupied and after some of the weaker mills in the North have dropped out.

I suspect that spruce will remain the "King of the Pulpwoods" even though part of his domain and perhaps a little of his glory may be taken away. Certain inherent qualities found in spruce which have made it supreme in the past will, in all likelihood, prove it superior in the future. The highest grades of paper will still be made from spruce, and the products of Southern pine, while marketable, will not reach the upper price brackets.

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WHO'S WHO
Among the Authors in this Issue

JOHN F. PRESTON (*Is the Paper Industry Moving South?*) is in charge of the forestry work of the Soil Conservation Service, with headquarters at Washington, D. C. A native of Iowa, he was graduated from the University of Michigan and entered the Forest Service of the United States Government, giving eighteen years to this work in the West. Mr. Preston was, prior to his present connection, forester for the Hammermill Paper Company for over ten years. Thoroughly familiar with the pulp and paper industry, few are better qualified than he to appraise this romantic new development that seems to offer a harvest of gold from Southern pine. For a process has been evolved for the production of pulp from a source hitherto found impractical—a process which threatens the crown of King Spruce of the North, till now unchallenged ruler of the pulpwood world. Read his story.



John F. Preston

FARNSWORTH CROWDER (*Elfin Forests*) does publicity work and free-lancing from his home at Altadena, California. A fanatical interest in botany and in the great kingdom of plant life generally, persisting from early school days, still offers him, he says, "hours of saving grace when I can grub about in my gardens or walk in the high country where the tall pines grow." He certainly knows the plant *habitants* of the California mountains and in "Elfin Forests" reveals the charm that is found in intimate acquaintance with these diminutive brush forests that clothe the western hills.

WOLFGANG VON HAGEN (*The Head Hunter Goes A-Fishing*) is American born, though living in South America at present. Educated in Europe, he has specialized in entomology, making in particular a deep study of termites. Following his natural history bent, he has lead expeditions into Africa, Mexico and Central America. At present he is engaged as leader of the Darwin Memorial Expedition on a two-year job in Ecuador, developing the classification and distribution of termites in that country.



Wolfgang von Hagen

VAL T. HANSON (*When Death Rides the Forest*) writes from Wisconsin. As construction foreman, located on the Moquah Unit of the Chequamegon National Forest in Wisconsin, he speaks convincingly of the deadly drama set in a once-green forest when man is careless and, in his carelessness, frees fire to play havoc with the green domain. And he proves how valuable has been the work of the Civilian Conservation Corps in aiding and abetting the downing of the red enemy—"when death rides the forest."

STEWART H. HOLBROOK (*Log Pirates of Puget Sound*), a well known free-lance writer of Portland, Oregon, was born in Vermont on the Canadian border, where in his early days he worked in logging camps and took part in great river drives. After the World War, he returned to do more logging in British Columbia, and in 1927 took up editorial work and writing. His background peculiarly fits him to tell this tale—a thrilling one—of the log gangsters that formerly preyed on legitimate lumber operators in the Puget Sound country, and how they were finally "put down" by the good Captain Craw, of the Harbor Police.



Stewart Holbrook

ROBERT S. MONAHAN (*Snow Bowl*) is a member of the Supervisor's staff of the White Mountain National Forest. He knows the "Snow Bowl" well, for he has been identified with the promotion of winter recreation in the White Mountains from the era when skis were used almost entirely for utilitarian purposes—"before society invaded the snow fields," to the present boom of mass skiing. Mr. Monahan is a graduate of 1929 of Dartmouth College, where he led numerous Dartmouth Outing Club winter expeditions to the area described in this article. He was graduated from the Yale School of Forestry in 1931. In addition to his experience on the White Mountain National Forest, he has also been located on the Jornada Range Reserve in New Mexico and the Sawtooth National Forest in Idaho. He used to good advantage his skiing experience acquired as a member of the winter sports team at Dartmouth in the 1932 Washburn Expedition to the Fairweather Range in Alaska and also the following winter as co-organizer of the Mount Washington Observatory, which he has described in the book, "Mount Washington Reoccupied."

G. H. COLLINGWOOD (*Western Hemlock*) is forester for The American Forestry Association.

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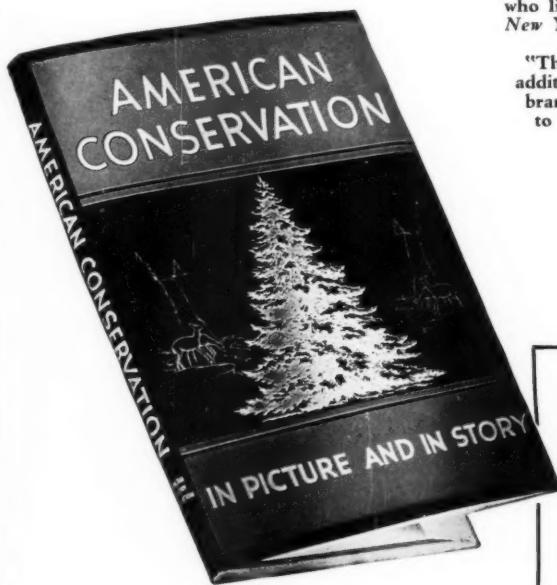
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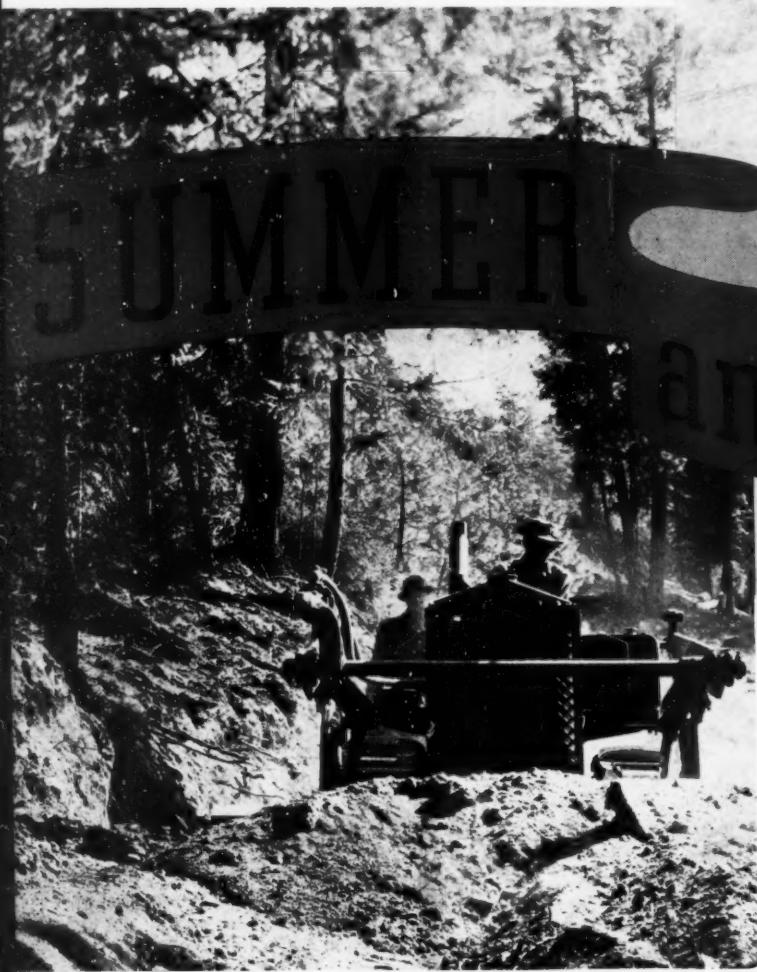
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